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UNDERSTANDING PROPERTIES OF THE UPIN FOR CLAIMS-BASED RESEARCH

Final Report

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Health Care Financing Administration

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ERRATA

Pages E-13 and 3-53:

HCFA's Bureau of Data Management and Strategy(BDMS) has the lead, instead of BPO, in implementing the National Provider Identifier (NPI).

Page E-17 (second full paragraph):

The carriers were asked to supply, for 625 previously selected physicians, 1993 total allowed charges and 1994 group practice affiliation and Medicare participation status. (See page 5-2 for details.)

Pages 3-36 through 3-40 and Table 3-12:

C & S Administrative's Maine operations were inadvertently omitted from the computer job that created Table 3-12.

Page 4-12 (last sentence of the first full paragraph):

delete the word "much"

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EXECUTIVE SUMMARY

1.0 INTRODUCTION

This report is the second produced for the HCFA project entitled: *Understanding Properties of the UPIN for Claims-Based Research.* It represents the fourth report produced by Health Economics Research, Inc. (HER) on the integrity of Physician Registry data and the research properties of the Unique Physician Identification Number (UPIN). The rest of this introduction provides background on the establishment of the Physician Registry, UPINs, the specific tasks for the current study, and an overview on how the research results might be useful to operations personnel, policy-makers, and behavioral researchers. The second through fifth sections summarize the key findings of each of the major chapters of this report. The sixth section provides a brief synthesis of the implications of the findings from all four reports.

In response to a Congressional mandate (P.L. 99-272), the *Physician Registry* was established in 1989 by HCFA. Administration of the Registry was contracted to Transamerica Occidental Life Insurance Company (TOLIC). The primary purpose of the Registry is to issue a UPIN to each physician billing Medicare for services provided to its beneficiaries. This one UPIN should then be used by the physician during his/her entire lifetime association with the Medicare program.

Each Part B Medicare carrier had developed its own physician identification numbers (PINs) for their local billing and claims processing systems. In consequence, prior to the establishment of the Registry, there was not a unique national Medicare identification number for each Part B physician. (The term *physician*, for the purpose of Medicare payment, refers to medical doctors [including osteopaths], doctors of dental medicine and dental surgery, chiropractors, optometrists, and podiatrists.) The lack of a unique Medicare PIN meant that individual physicians could not be readily identified creating numerous analytic and administrative challenges. For example, the inability to uniquely identify physicians hindered HCFA's efforts to avoid duplicate Part B billings by interns and residents for services that were also paid as Part A hospital services to a teaching hospital. The lack of unique PINs also hindered efforts to detect fraud and abuse and to effectively conduct quality assurance studies. In addition to operational issues, studies of physician behavioral responses to Medicare policy

changes were limited because individual physicians could not be reliably identified. UPINs were created in the expectation of overcoming these deficiencies.

The establishment of the Registry involved the coordination and integration of information from Medicare carriers. This was but one of the important operational changes made to the claims-processing system during the late 1980s. Starting in the late 1980s and finishing during the early 1990s, Medicare carriers were required to enter into one of the new shared-processing systems. These systems were designed to increase standardization of provider files and claims processing. In January 1994, HHS awarded the contract for design of the new Medicare Transaction System (MTS) to GTE Government Systems Corp. Operations are expected to begin in 1999. When the MTS is fully operational, claims-processing responsibility will be consolidated and standardized at considerable savings in administrative resources. Claims processing under the MTS, thus, will be in total contrast to the de-centralized claims-processing system serviced by 36 Part B carriers in nearly 60 geographic units that prevailed in 1985.

HCFA and HCFA-contracted studies, including those performed by Health Economics Research, Inc. (HER), have previously documented numerous deficiencies in Registry data, the apparent absence of performing and referring UPINs on claims, and the lack of consistency in the coding between data elements in the Registry file and in NCH data. While the recent retrospective editing of Registry data promises to alleviate some of the current concerns regarding the reliability of UPIN data, inconsistencies between the Registry file and NCH claims remain.[1]

HCFA contracted with HER to extend and deepen HCFA's understanding of the quality of the Registry's data and of the limitations of physician-based claims data under the new UPIN system. Specifically, major tasks of this study are to:

1. discover problems Peer Review Organizations (PROs) encounter when conducting studies relying on UPINs;

2. in preparation for carrier interviews, document problems encountered when using Registry data in conjunction with Medicare claims data;

3. collect carrier-maintained data in order to perform data validation studies;

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[1]During 1994 through 1996, HCFA instructed carriers to correct the deficiencies. This included obtaining valid values, for each physician's active practice settings, for those data elements with incorrect or missing values.

4. develop professional and practice profiles of low- and high-volume physicians to provide a contextual background with which to assess data collected directly from high-volume physicians;

5. conduct interviews with carriers to extend HCFA's understanding of the impact of carrier operations on UPIN-related Registry and NCH data;

6. perform studies of referring UPIN reporting;

7. conduct interviews with state license boards to understand issues in working with license numbers and with the boards themselves to exchange information on physician credentials; and

8. perform analyses on Registry data elements not hitherto examined and new analyses of Registry and claims data that rely on knowledge gained from the interviews and data collection efforts.

The results from the third, seventh, and eighth tasks are presented in this report. The results for the other tasks were presented in the *Interim Report* for this study.

The results from these analyses should be useful to operations personnel, administrators, policy-makers, and behavioral researchers. For instance, although the duties of existing claims-processing contractors under MTS will change, contractors will still have an important role in Medicare payment and related operations. Specifically, these results should help GTE and the new MTS contractor design better edits for both claims and Registry data in order to attain greater data accuracy and fewer inconsistencies than has hitherto been the case.

In addition to affecting behavioral research and carrier operations, some of the results of this study might provide useful information that could affect physician payment methodology. For instance, clinical laboratory services, services that are often referred, are currently apportioned to nonsurgical services in the growth calculations for the Medicare Volume Performance Standards (MVPS). Clearly, however, surgeons also order clinical laboratory services. Thus the current policy may be inequitable to non-surgeons. If HCFA deems current *referring* UPIN reporting sufficiently reliable for policy purposes, distributing clinical laboratory services on the basis of referring UPINs in place of current policy could affect MVPS limits. Changes in MVPS limits, in turn, might affect the distributive impact of the Medicare Fee Schedule (MFS).

Each of the following sections of the rest of the Executive Summary contains a brief topic introduction, key findings, and a discussion of the results from each of the four primary chapters of the report. Section 2 summarizes the results of interviews with state licensing

boards. Section 3 summarizes analyses of selected Registry data elements and comparisons of data elements common to the Registry and NCH claims. Section 4 summarizes an activity analysis of the Registry and compares the characteristics of physicians with no Medicare claims activity to those of physicians with claims activity. Section 5 summarizes a set of comparisons of carrier data obtained directly from five carriers, to Registry and NCH claims data. It also summarizes the high-volume physician investigation that was undertaken with the assistance of two carriers.

A large number of individual findings are presented in the Executive Summary. Because so many data elements were investigated, it is inevitable that many problems were found. Taken together, it is quite easy to get the impression that the Registry and NCH claims files contain many data elements whose quality is relatively poor. From this, it is but a short step to the conclusion that Registry and NCH claims data are generally unreliable. It is our belief, however, that this conclusion would be unwarranted and, rather, that most Registry and NCH claims data elements appear generally quite accurate. For this reason, Section 6 provides a brief synthesis of the implications of the findings from all four reports.

2.0 STATE LICENSING BOARD INTERVIEWS

The primary purposes of our discussions were to learn more about the process used to assign the state license number, to assess the useability of the state license number as a unique identifier for physicians and other health professionals, and to assess the reliability of the data maintained in the state licensure files. We inquired about the policies and procedures the state licensing boards follow to issue and regulate state license numbers. A better understanding of their operations would facilitate the evaluation of the quality of the state licensing board's data (license numbers) which are used by Medicare carriers and the Physician Registry to identify physicians. Of particular interest was the process of assigning state license numbers, the format of the license number, and the maintenance and updating of the licensure information. In addition, the communication among providers, Medicare carriers, and the state licensing boards was examined to provide a better understanding of the flow of information and how it might be improved through high-technology methods. We use information gathered from telephone discussions with eighteen state licensing boards to draw conclusions about these issues.

Key Findings

- The primary mission and responsibility of all state licensing boards for all types of providers is to assure compliance with the applicable Medical Practice Act of their state by ensuring that the professional they license is legally qualified to practice medicine or their profession. As such, licensing boards perceive their mission as issuing licenses rather than license *numbers*.

- Although the boards understood the importance of their licensure information to insurers, including Medicare carriers, the boards did not view dissemination of this information as a primary responsibility.

- Licensing boards universally use information other than the license number to identify individuals in their application process and in their data bases. In general, the boards rely on the social security number as the primary identifier and use information such as name, date of birth and year of graduation from medical school as secondary identifiers.

- Consequently, these findings suggest that a state license number, alone, is not a reliable identifier of unique individuals. But, when used in combination with other information, such as social security number, date of birth, and full name, the probability of uniquely identifying individuals increases.

- Very few states coordinate the activities of their various professional licensing boards either within or across states. Nor do they use the same data processing systems, number formats, or user interface procedures. Users of licensing board information, such as Medicare carriers, must therefore maintain an extensive listing of board-specific information and be very attentive to detail when receiving and processing information from such a wide variety of sources.

- The likelihood of the same individual having multiple license numbers from one board at the same time appears to be limited. Because the boards typically search their data base looking for a current record for an applicant prior to creating a new record, the possibility of the same individual appearing twice in a data base and being assigned multiple numbers appears unlikely.

- The likelihood of the same individual having multiple license numbers from the same board over a period of time appears to be somewhat greater. While many boards issue lifetime license numbers, several of our interviewees stated that they issue a *new* license number to a previously licensed professional whose license has lapsed. Thus, central data bases of information, such as the UPIN Physician Registry, must be updated regularly to reflect changing license numbers.

Discussion

There were several key findings obtained during the course of the interviews that have important implications for using the license number as a unique identifier. First, and most importantly, the boards universally use information other than the license number to identify individuals in their application process and in their data bases. In general, the boards rely on the social security number as the primary identifier and use information such as name, date of birth and year of graduation from medical school as secondary identifiers. Most use a combination of variables to ensure accurate identification of an individual. We believe the boards' lack of reliance on their own issued license number as an identifier sends a strong message that consideration should be given to other identifiers, such as social security number.

Another implication of the above findings is that it appears that it is not now feasible and will not be feasible in the near future to use state license numbers on a wide-scale basis as a reliable identifier by which to merge non-Medicare with Medicare data. If the license number is to be used in this capacity, it should be limited to circumstances in which the license numbers are "lifetime." Researchers may have to contact state licensing boards directly to determine whether the license numbers are issued for a lifetime.

3.0 REGISTRY DATA INTEGRITY AND CONSISTENCY OF REGISTRY AND NCH CLAIMS DATA

The ability of the Medicare's Physician Registry to support analyses and investigations of physician behavior depends on the integrity of the Registry data elements. Both erroneous data and data of dubious quality in the Registry were found in previous studies. In contrast to previous studies, this study relies heavily upon interviews with carriers and interviews with state licensing boards for some of the analyses. The site visits and interviews with carriers have provided information on how flawed data can find its way into carrier provider files and, hence, Registry files. The integrity of selected Registry data elements that have not been previously analyzed is documented here. These analyses utilize quarterly Registry files that HCFA receives from the Registry contractor, TOLIC.

Physician-specific data elements (e.g., specialty) present on NCH claims data are supplied directly from carrier provider files. Discrepancies between a quarterly Registry file

and NCH claims data from the same year for common data elements, such as specialty, can arise because changes made to the Registry may be before or after the submission of a specific claim. Another purpose, then, of this analysis is to document discrepancies between the Registry and the NCH claims data for selected data elements.

Key Findings

State License Numbers

As noted in the previous section, there are limitations to the use of state license numbers as unique physician identifiers. Nonetheless, the presence of accurate license numbers on the Registry is important to help deter the issuance of multiple UPINs to individual physicians. Further, if the state license numbers in the Registry are reliable, then linkage of Medicare UPIN and claims data to other data bases, such as the National Practitioner Data Bank, might be made more reliably. To assess the integrity of the license number on the Registry, four separate analyses were performed. The first three analyses were performed using the April 1994 Registry while the fourth used the July 1996 Registry. The fourth analysis, of the conformance of the format of state license numbers in the Registry to licensing board specifications, draws upon information obtained from the state licensing board interviews.

- Evidence was found for the association of more than one UPIN per physician (state license number). The proportion of unique state license numbers that had more than one UPIN associated with them was lowest in Alabama at 0.1 percent and highest in Minnesota at 4.4 percent. Possible sources for this association include:
    - transcription errors in the Registry;
    - issuance of multiple UPINs per physician.

- Evidence was found of the association of more than one license number per physician (UPIN). The proportion of distinct physicians (UPINs) that had more than one state license number (within a state) associated with them was lowest in Massachusetts at 0.5 percent and highest in Illinois and Indiana at about 22.5 percent each. Possible sources for this association include:
    - license number transcription errors in the Registry;

- license numbers not updated when:
  - there are changes in the format of state license numbers, or
  - new licenses issued after a license has lapsed.
- practice settings not de-activated on a timely basis.

- The potential problem of UPINs being entered into the state license number field on the Registry file appears to be minor.
- Although the conformance of the format of state license numbers found in the 1996 Registry with the state licensing boards' specifications is high (above 95 percent) for eight carriers, it is low for the other nine.

Carrier-Issued PINs in the Registry

Using PIN specifications obtained during the seven carrier interviews, the conformance of the format of PINs in the Registry to the carriers' own specifications was analyzed.

- Although the conformance of the format of carrier-issued PINs found in the 1994 Registry with the carriers' own specifications is high (above 95 percent) for four carriers, it is low for the other three. It is not known whether this finding is due to poor adherence by carriers to their own specifications or whether they did not provide all relevant specifications during HER's interviews.

Zip Codes on the Registry

The consistency of business zip codes in the July 1996 Registry to the other components of physician business addresses was examined. Because of the nature of the analysis, maximum and minimum consistency rates, rather than point estimates, were estimated for each carrier.

- No carrier had a 100 percent consistency rate.
- For three carriers, the consistency rate (maximum) was only 22 percent. For all carriers, the average maximum consistency rate was 78 percent. Even excluding the carriers with the three lowest consistency rates, the average maximum consistency rate was only 88 percent.

- Address information was so poor on 23 percent of the records that it was impossible to determine if the Registry zip code, if present, was accurate.

Group Practice Indicator

PINs from the July 1996 Registry file, for records whose practice type data element indicated that the physician's setting was a group practice, were compared to PINs in the recently available 1995 Group Membership File.

- On average, only 61 percent of the Registry group-member PINs were found in the Group Membership File.
- PIN match rates ranged from 91 percent to less than one percent (all four areas serviced by Pennsylvania BS). Only 11 carriers had match rates greater than 80 percent.

Claims UPINs and PINs

UPINs and PINs found in the 1993 Physician Part B sample line items (fourth quarter only) were compared to the April 1994 Registry.

- UPINs for 99.77 percent of the line items were found in the Registry.
- Using information obtained during the carrier interviews, the *Interim Report's* analysis of the matching of claims' PINs to the Registry was replicated.
  - More than 35 percent of the distinct PINs found in NCH claims could not be found in the Registry for nine carriers. Between 10 and 20 percent of the distinct PINs found in NCH claims could not be found in the Registry for another five carriers. Algorithms could not be devised to find the claims' PINs in the Registry for another nine carriers.
    - Using carrier-provided information on the format of their PINs, it was possible to match PINs found in the claims for C & S Administrative Services (Massachusetts) and Pennsylvania BS (Pennsylvania) whereas without the information, it would have been difficult to develop the matching algorithm.
    - The PINs used on claims for some carriers such as California BS (Northern California) do not appear in the Registry. The reason in California BS's case is due to the fact that only *individual* PINs are used in the claims. For physicians that are only members of groups

(i.e., they do not have a separate solo practice), their *group-member* PINs are present in the Registry, but not in the claims.

To interpret these results properly, it is important to understand what is meant by "matching PINs." Consider the case illustrated in Panel A of Exhibit ES-1. The carrier submitted two group practice settings to the Registry for a physician. The PINs for the group practice settings have two components: (1) a group identifier and (2) an individual identifier (separated in Exhibit ES-1 by a dotted line). In processing claims, however, the carrier only uses the individual identifier. When searching the Registry for the PIN on the claim, an exact match can not be made. To "match" the PINs in the claims data to the PINs in the Registry for this carrier, it is necessary to parse the Registry PINs so that the individual identifier is extracted. In this way, PINs on the claims can be *associated* with PINs in the Registry. In such circumstances, however, PINs in the claims file can not be directly matched, except fortuitously, to the Registry practice setting in which medical care was provided. Note that this problem should not arise for those physicians that do not belong to group practices. And, of course, not all carriers have PIN systems as illustrated in Panel A.

A slight variation of the preceding example is illustrated by Panel B of Exhibit ES-1. The only difference between it and Panel A is that a "solo practice setting" for the physician is also present in the Registry. (Note that the solo setting may or may not represent an actual location where medical care is provided. That is, depending on the carrier, such records might be "placeholders" – records submitted to the Registry so that the individual identifier is available to Registry personnel.) Even though the individual identifier is present on one record for each physician, the PINs on the group practice settings were parsed since it was not known (1) whether the solo records were real practice settings or placeholders and (2) how consistent carriers are in this usage.

Consistency of Data Elements Common to the Registry and NCH Claims

Data elements common to the NCH claims and the Registry files were compared. Because of the problems in matching claims' PINs directly to Registry practice settings, the consistency rates reported here should be interpreted as lower bound estimates.

EXHIBIT ES-1

CLAIMS' PINS AND REGISTRY PINS

PANEL A

PIN on Claim	Practice Setting Type	REGISTRY INFORMATION: PIN Component: Group	REGISTRY INFORMATION: PIN Component: Individual	Parsed PIN
456	Group	489	456	456
	Group	726	456	456

PANEL B

PIN on Claim	Practice Setting Type	REGISTRY INFORMATION: PIN Component: Group	REGISTRY INFORMATION: PIN Component: Individual	Parsed PIN
456	Group	489	456	456
	Group	726	456	456
	Solo		456	456

- The claims' specialty code was equal to the Registry's specialty code for 94.1 percent of the line items.
- The last claim expense date was consistent with the Registry's DRIP status for 98.4 percent of the line items.
- The claims' zip code was equal to the Registry's business zip code for 90.4 percent of the line items.
- About 81 percent of the line items had the same Medicare participation status as recorded on the Registry.
- The quality of the *practice type* data element on the claims was so poor that a comparison with its Registry counterpart had to be abandoned.

Discussion

Several of the key findings have significant implications for operations. The inability to find nearly all of the PINs in the Registry that actually appear on claims gives the appearance that physician payments are liable to inaccuracies. This impression, however, might not be actually indicative of a real physician payment problem. For instance, the system used by California BS and, presumably, by other carriers seems to rely on one or more internal PINs[2] that serve to link individual physicians to group practices. And, at least in the California BS case, there also may be internal PINs for physicians that practice only in solo environments. The integrity of such systems can not be ascertained with the information currently available.

Many problems were found with the state license numbers as recorded in the Registry. It is quite evident that there is a significant number of transcription errors in the license numbers. The conformance of the format of the license numbers on the Registry to the format specified by state licensing boards also was not sufficiently high; in 9 of the 17 cases examined, the conformance rate was less than 95 percent. Some state licensing boards (e.g., Utah) changed the format of the license number during the past few years. In such situations, it might be necessary for the local carrier to obtain the correct license number formats on a historical basis and then update their records accordingly. As long as states use different license number formats, it will never be possible to uniquely identify physicians using state license numbers. The more modest goal of using state license numbers to identify physicians

[2]Some carriers maintain *internal* PINs for linking individual physicians to group practices. While internal PINs do not appear on claims data, they sometimes appear in the Registry.

in non-Medicare claims does not appear to be feasible at this time because of problems with state license numbers on the Registry.

It appears that the Group File and the Group Membership File are not complete. It also appears, in the case of Pennsylvania BS, that the carrier is not using its standard Registry PIN for physicians in group practices in the Group Membership File. HCFA may want to conduct further analyses on these files to ascertain whether these conjectures are correct.

The inability to find in the Registry a significant number of the PINs that appear on claims also makes it difficult for researchers to study changes in the organization of medical practice. The importance of being affiliated with a group practice can not be ascertained without reliable identifiers to link claims to specific practice settings in the Registry, the Group File, and the Group Membership File.

Comparisons of data elements common to both the Registry and NCH claims data revealed some large discrepancies. In particular, Medicare participation status on the claims data was the same as on the Registry for only 81 percent of the line items. Since Medicare payments are affected by participation status, such discrepancies might be indicative of over- or under-payment to physicians. Since Medicare allows physicians to change their Medicare participation status during the fourth quarter of each year, lags in updating Registry files might account for the low consistency rate. If so, then many physicians must have changed their participation status during the fourth quarter of 1993. If this conjecture is correct, then it is important to understand why so many physicians changed their participation status.

A portion of the discrepancies that were found are due to problems in matching claims' PINs directly to Registry practice settings. This problem undermines the ability of HCFA to use the Registry to validate information on Medicare claims. The continued use of individual identifiers instead of practice setting-specific identifiers on Medicare claims by some carriers indicates that they did not fully understand the purpose of the Registry and UPINs. To help rectify this and other problems, HCFA's Bureau of Program Operations (BPO) implemented the forthcoming National Provider Identifier (NPI). It is BPO's intent that the intelligence built into the NPI will overcome problems in matching claims to the practice settings in which medical care was provided.

A portion of the discrepancies between the Registry and claims data is due to the fact that, for some carriers, two different files are the sources for the data elements. Discrepancies between these two carrier-maintained files can give rise to discrepancies between Registry and

claims data. The practice of maintaining two separate files of similar data represents expensive duplication of effort. This practice also reduces the effectiveness of using the Registry to validate physician information on Medicare claims.

4.0 ACTIVITY ANALYSES

The data problems discussed thus far, plus those from the *Interim Report* and from a previous study[3] suggest problems in the maintenance of data sent to the Registry. In particular, the carrier interviews revealed several potential sources of erroneous data in provider files and, hence, the Registry. For instance, double-entry of data often is not performed, thus allowing transcription errors to creep into the provider files. Two other potential sources of problems are investigated here: (1) workload size, or the total number of changes that have to be made to the provider file; and (2) the presence of *de facto* inactive physicians.

Clearly, the sheer volume of changes carriers must make could account for a significant share of the Registry data elements with erroneous or inconsistent values. Lack of claims activity also could influence data quality. The Registry practice settings of physicians for whom there is no claims activity are probably more likely to have erroneous or out-of-date information than those of physicians with claims activity. To give the analysis a context, the characteristics of (allegedly) Registry-active but claims-inactive physicians are compared to the characteristics of Registry-active and claims-active physicians.

Key Findings

Registry Activity Analysis

- Of the nearly 1.6 million practice settings that remained active throughout 1994, 43.7 percent had at least one change in 1994;
- more than 80 percent of practice settings for six carriers had at least one change in 1994;

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[3]Health Economics Research, Inc. *Unique Physician Identification Number (UPIN) Validation Studies, Carrier Analysis* (August 1994) and *Final Report* (February 1995). Prepared under HCFA Master Contract No. 500-92-0020.

- of the nearly 312,000 practice settings newly added during 1994, 37 percent had at least once subsequent change in 1994;

- of the 103,874 practice settings de-activated during 1994, 71.5 percent had at least one change prior to, and aside from, de-activation in 1994; and

- the number of practice settings changed or added seemed unusually high for Empire BC/BS, Montana BC/BS, Utah BC/BS and the carrier for Michigan.

- There were 4.9 million total changes to individual data elements;

- nearly half of the nearly 5 million changes, however, were due to just two carriers: Empire BC/BS and the carrier for Michigan;

- of the remaining 2.5 million changes:

  - TOLIC had the most with 249,000 followed by Pennsylvania BS with 233,000 (both of these carriers have a large number of physicians); and

  - the billing and business zip codes together with the state license number accounted for 55.5 percent of the changes.

- The data elements that had the fewest changes were date of death, the three sanction variables, credentials, physician status, and the physicians' last name.

- When restricted to the practice settings that remained active throughout 1994 and excluding Empire BC/BS and Michigan, there were 1.7 million total changes to the data elements.

  - Once again TOLIC and Pennsylvania BS had the most changes;

  - the billing and business zip codes together with the state license number accounted for nearly two-thirds of the changes; and

  - the data elements that had the fewest changes were date of death, the three sanction variables, credentials, physician status, DRIP status, and the physicians' last name.

Characteristics of Physicians Without Claims Activity

- Of the nearly 1.1 million distinct carrier/UPIN combinations that had active practice settings on the Registry, about 36 percent were inactive (no claims activity).

- Nine carriers had over 40 percent of their (allegedly) Registry-active physicians without any claims activity

- California BS had the highest rate with 51.4 percent.

- Of the nearly 690,000 Registry-active physicians (excluding RRB carriers), nearly 30 percent did not have claims activity.

  - Of the Registry-active physicians with no claims activity, chiropractors and oral surgeons accounted for more than 40 percent.

  - Nearly 98 percent of the chiropractors had no claims activity, a result apparently due to Medicare restrictions on claims filed by chiropractors.

  - About 77 percent of physicians sanctioned by Medicare did not have claims activity.

  - About 50 percent of the physicians 65 years old or older did not have claims activity compared to 22 percent of physicians aged 45-54.

  - Solo practitioners are about twice as likely to have no claims activity than physicians belonging to group practices.

Discussion

The tremendously high volume of changes to Registry data during 1994 is one explanation for the presence of erroneous values in Registry data elements and for discrepancies during comparisons of data elements common to the Registry and NCH claims data. Erroneous values can easily arise if carriers are under-staffed. While some of the changes can be attributed to BPO directives to carriers to correct their data, the total number of changes still seems very high.[4]

About 30 percent of physicians with active Registry practice settings had no claims activity. Thus, it is quite easy to understand why some data elements on the Registry might not be up-to-date. Some types of physicians (e.g., chiropractors) might not be very responsive to carrier requests for up-to-date information because they have such low claims activity and, thus, have little financial incentive to respond.

The analyses of *de facto* inactive physicians were performed using 1993 claims data. Since then, in October 1994, BPO revised the *Medicare Carriers Manual* to instruct carriers to de-activate Registry practice settings if there had not been any associated claims activity during

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[4]When updating other data elements on a Registry practice setting, BPO instructed carriers to also include a valid state license number if it was previously missing. BPO's clean-up directives, thus, likely account for a majority of the license number changes, but not necessarily so for the zip codes and other data elements.

the preceding three years. While this revision might reduce the percentage of Registry-active physicians without claims activity, it could cause other problems for the carriers. Specifically, some HMOs have required their physicians to obtain UPINs in order to facilitate the processing of occasional fee-for-service claims.[5] Since many individual HMO physicians rarely provide services to a Medicare beneficiary on a fee-for-service basis, these physicians or their HMO may complain to the carriers if the carriers require new applications to re-activate practice settings. Additionally, some state Medicaid programs will not issue a Medicaid provider number unless the physician already has a Medicare provider number. BPO's standards, thus, could also cause provider-relation problems for carriers, especially in the case of pediatricians.

5.0 ANALYSIS OF CARRIER-SUPPLIED DATA

The problems discussed thus far give rise to questions regarding the overall integrity and quality of Registry and NCH data and, when they are inconsistent with each other, which data should be used. The fact that data from some carriers have problems may lead analysts and investigators to have concerns about the quality of data from other carriers that appear to have no problems.

Since the previous studies of Registry and NCH claims data were, essentially, self-validation studies, HCFA wanted to use another set of data to validate Registry and NCH claims data. Since carriers are the source of both Registry and NCH claims data, the seven carriers[6] that were interviewed for Chapter 4 of the *Interim Report* were each asked to provide (1) a complete PIN-to-UPIN crosswalk, and (2) total allowed charges, group practice affiliation, and Medicare participation status for a sample of physicians. Each carrier was also asked to collect data to support an investigation of high-volume physicians.

Because the carriers are the source of both Registry and NCH claims data, it was HCFA's hope that the carrier-supplied data, other than the crosswalks, would prove to be a "gold" standard for the data comparisons. That is, glitches in claims processing and the maintenance of the Registry file might be responsible for erroneous data and inconsistent data

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[5]Op. Cit. *Carrier Analysis*.

[6]Xact Medicare Services (Pennsylvania), Arkansas BC/BS (Arkansas), C & S Administrative Services (Massachusetts), MetraHealth (Mississippi), California BS (Northern California), Alabama BC/BS and Aetna (Georgia).

in NCH claims and Registry files. It was HCFA's hope, therefore, that these glitches would not be manifested in the data the carriers maintain.

Key Findings

- Collecting data from carriers proved to be very time-consuming and costly.
- Carrier-supplied data often did not comply with the requested specifications (e.g., different formats or missing important data elements).
- After obtaining the crosswalk, with the exception of Alabama BC/BS at 92.7 percent, UPINs were found for 6.1 percent to 12.7 percent of NCH line items previously without UPINs.
- Total Medicare allowed charges per physician had higher values when derived from NCH claims than when derived from carrier-supplied data.
- The consistency rate of the carrier-supplied Medicare participation status with 1993 NCH claims ranged from 93.6 percent (MetraHealth) to 58.2 percent (C & S Administrative Services).
- The consistency rate of the carrier supplied group practice indicator with Registry data ranged from 99.8 percent (Pennsylvania BS) to 93.2 percent (MetraHealth).

In the comparison of the carrier-supplied Medicare participation status with Registry data:

- the consistency rate was sensitive to whether the April 1994 or January 1995 Registry file was used in the comparison;
- the consistency rates ranged from 99.1 percent (Alabama BC/BS) to 30.9 percent (MetraHealth); and
- with the exception of California BS, those carriers with high (low) consistency rates in the NCH comparisons had low (high) consistency rates in the Registry comparison.

One of HCFA's on-going concerns is the existence and rationale for physicians with high annual Medicare volume and allowed charges (greater than one million dollars in total). Little is known about the circumstances under which such high billings arise. Among HCFA's concerns about high billings are that (1) instead of using their own identifier, more than one physician is using the same identifier when billing Medicare and (2) some physicians are

ordering too many diagnostic tests, possibly due to financial conflicts of interest. As a consequence, HCFA contracted with HER to coordinate with Medicare Part B carriers on an investigation of high volume physicians. Of the seven carriers contacted, only Alabama BC/BS and C & S Administrative Services (Massachusetts) were able to assist HER. Both provided HER with data on five high-volume physicians.

Key Findings:

Alabama BC/BS

- Two of the five high-volume physicians are cardiologists, one is a cardiac surgeon, one is an ophthalmologist, and the last is either a hematologist or an oncologist.

- With seven certified ophthalmology technicians in his employ, the ophthalmologist could have easily generated one million dollars in allowed charges during 1994. For none of the other subject physicians does the presence of physician extenders (e.g., physician assistants and nurse practitioners) seemingly contribute to the physician's ability to provide a high volume of services.

- The services provided by one of the cardiologists and the cardiac surgeon were predominately surgery and medical care - the line item counts for both do not seem particularly high.

- The other cardiologist and the hematologist (or oncologist) seem to have performed a large number of services; nearly 28,000 and over 40,000, respectively. This cardiologist also ordered a very high amount of diagnostic laboratory services: over 50 percent of his allowed charges and about 70 percent of his line items.

  - If both of these physicians exclusively provide medical care to Medicare beneficiaries, then their line counts are plausible even though they are high. If, however, both of their practices have a substantial non-Medicare component, then their line item counts might indicate that their billing identification number is being used by other physicians and providers.

  - If more than one physician or provider is not using the same identification number for billing Medicare, the large number of laboratory tests ordered by the cardiologist seems inordinately high and, thus, might warrant further investigation.

C & S Administrative Services (Massachusetts)

- The data provided by C & S was not as complete as Alabama's, thus not allowing a comprehensive analysis of high-volume physicians in Massachusetts.

- Three of the five high-volume physicians are ophthalmologists. In the absence of information on the staffing of physician extenders such as certified ophthalmology technicians, it is not clear how the ophthalmologists achieved over a million dollars in allowed charges.

- One of the high-volume physicians is a psychiatrist that, from the available evidence, mainly provides services in a solo practice. A million dollars in Medicare allowed charges for this physician seems implausibly high.

Discussion

With their orientation towards claims processing, carriers seem to have problems in providing data in non-standard formats (for carriers, that is) to outside parties such as professional researchers. Some carriers do not routinely archive their provider file, which made it difficult to obtain the file for the specified time period (usually 1994). Additionally, since total allowed charges from NCH claims was often higher than from carrier-supplied data, carriers might be storing such information on the basis of the approval or paid date for the line item rather than the date of the claims submission (by the provider) or the service date.

In the carrier interviews, it was learned that some carriers submit claims to the CWF even though a UPIN had not yet been obtained for the (presumably) new physician who had sent his/her first Medicare claim to the carrier. Even though it is desirable that carriers obtain a UPIN prior to claims submission, they sometimes do not wait because they also have been instructed by HCFA to process claims in a timely fashion. Delays in obtaining a completed application form from the new physician or in Registry processing may be the reason carriers finally forward claims without UPINs to the CWF. This may explain why it was possible to use the carrier-supplied PIN-to-UPIN crosswalks to find UPINs for NCH line items previously without UPINs. If this conjecture is not correct, then the reason for missing UPINs on NCH claims could be more serious. That is, there might be breakdown during claims processing when the claims-processing computer program accesses the provider file to obtain the UPIN associated with the PIN of the performing physician.

The results of the comparison of carrier-supplied Medicare participation status with comparable data elements in the Registry and NCH data point towards the time sensitivity of Registry data. While claims from every day of the year are present in the NCH, Registry data is typically only available for specific dates such as April 4, 1994. Even the carrier-supplied data suffers from limitations of the Registry data. In contrast, when claims are processed, the computer programs that process claims have immediate access to the carrier's provider file. As previously shown, even when just comparing quarterly Registry files, it is apparent that the carriers' provider files are constantly being updated. This accounts, then, for some of the discrepancies found in comparisons of common data elements in the Registry and NCH claims data. An unsettled question is why so many data elements have to be changed, even those that seemingly should remain relatively stable during the year (e.g., zipcode).

Finally, the investigation of high-volume physicians was something of a disappointment. Even with detailed instructions, one of the two carriers that actually attempted to provide the requisite data did not provide all of it. Other carriers cited lack of available personnel and time as a reason for not undertaking the data collection, even when offered additional monies. This seems odd because all carriers should have a fraud-and-abuse section in their basic carrier contract with HCFA requiring them to routinely perform such investigations.

Some of the results of the high-volume physician investigation suggest that the identifier used to bill Medicare might be used by other physicians and providers for two of the Alabama physicians and at least one of the Massachusetts physicians. One of the Alabama physicians seems to have ordered an inordinately high number of laboratory tests. A million dollars of allowed charges seems implausibly high for the Massachusetts psychiatrist. HCFA might want to consider having the carriers further investigate these cases. The results do not indicate suspicious behavior by the other high-volume physicians that were investigated.

6.0 IMPLICATIONS OF THE FINDINGS FROM THE UPIN RESEARCH PROJECTS

HER produced four reports on the integrity and consistency of Registry data, both internally and in comparison to NCH claims data. The main finding from these reports is that while many Registry data elements appear generally quite accurate, other data elements such as the state license number have significant problems either because a state license number is

not present in the Registry or was not correctly entered into the provider or Registry file. Most of the Registry data elements with the most significant problems were not initially required and, thus, not unexpectedly, have poor data quality.

These findings mostly came from analyses of 1993 and 1994 Registry data. Since mid-1994, however, BPO instructed carriers to improve the quality of the Registry data, not only for practice settings being added to the Registry for the first time but also for the older active practice settings. The quali'y of data on Registry files after 1994, thus, should be better than before 1995. However, analysis of state license numbers and zip codes on the July 1996 Registry file revealed data quality problems. Also, starting in 1995, non-physicians and group practices have records in the Registry. If the experience of the physician records in the Registry is any indication, the quality of the data for these new types of "providers" will be unacceptably low and then slowly improve.

Discrepancies have been found during comparisons of data elements (e.g, Medicare participation status) common to Registry and NCH claims data. A problem in performing such comparisons, however, is that the data on the Registry reflect just one point in time whereas the entire year (or analytic time period) is represented in the claims data. The activity analysis (Chapter 4) of Registry data indicated that there was an extremely large number of changes (2.5 million, excluding changes from Empire BC/BS and the carrier for Michigan) made to the Registry file during 1994. Since the comparisons of just five quarterly Registry files understates the total actual changes made to carrier provider files (and the Registry), the total number of changes could very well exceed three and perhaps four million. In light of the large number of changes to the provider file, discrepancy rates in data elements common to the Registry and claims data do not seem unduly high. The more fundamental question is why so many values on the Registry are changing, even for data elements that should remain relatively stable over the period of year (e.g., zip codes). The HCFA-directed clean-up of Registry data does not seem to provide a complete answer to this mystery.

The reporting rates for UPINs on 1993 NCH claims were higher than in previous years, particularly for the referring UPIN. Performing UPIN reporting is still not complete (Chapter 5). Carrier interviews suggest that conflicting priorities in timely processing of claims and the issuance of UPINs might be responsible for claims without performing UPINs. If this is not the case, then there might be serious problems in the coordination of processing of claims with carrier provider files.

Unlike performing UPINs which are placed on claims by carriers, the source of referring UPINs are performing providers (e.g., another physician or independent laboratory). While the overall reporting rates of referring UPINs seem to be acceptably high, particularly for those line items subject to the CWF edit policy, the trace rates seem low. That is, there is a significant share of cases in which the referring physician could not be found elsewhere (traced) in the claims record as providing services to the referred Medicare beneficiary. It is not clear whether this problem is due to ambiguities in HCFA's instructions for completing the HCFA-1500 claims form or to other unknown problems. In any case, the poor trace rates cast doubt on the overall reliability of referring UPIN reporting.

The establishment of the UPIN has clearly made it easier for researchers and other investigators to link together all of the Medicare claims for given physicians. And there is evidence that UPIN reporting is improving. Although there are no publicly available reports on the current integrity of Registry data, there is reason to believe that it is substantially higher than in 1993 and 1994.

Two important questions are: Is current Registry data and UPIN reporting on claims good enough? How much can the quality of Registry data be improved and at what expense? It is clear that the quality of Registry data can still be improved. (Note that since many data elements present in the Registry are also on claims, it is the quality of data maintained in carrier provider files that would be upgraded in the first instance.) In the meantime, users of Registry data need to be aware that quality of the data is not uniformly high and to inspect it before using it. Whether it is worth the additional expense to improve Registry data depends on the answers to the first question. Some improvements in the claims data do not seem to require improvement in Registry data. In particular, it seems likely that improvement in the trace rate of referring UPINs does not require improvement of Registry data.

The answers to the first question, however, depend on the public policy issues that researchers are trying to address. Registry data is probably good enough to provide answers to simple questions such as the differential change in the volume of Medicare claims by Medicare participation status in response to a change in, say, the Medicare Fee Schedule. On the other hand, trying to use state license numbers on the Registry to link non-Medicare claims to Medicare claims to determine how the quantity of non-Medicare services are affected by changes in Medicare policies does not seem feasible at this point in time.

For some Medicare payment parameters, such as the Geographic Practice Cost Index which relies on zip codes to distribute Medicare services, the quality of Registry data might not be sufficiently high. If the zip codes maintained in carrier provider files have the same low quality as indicated in the zip code analysis, then Registry data needs to be improved. While Registry files are not used in claims processing, Registry files can be used to validate the accuracy of data elements on claims such as zip codes.

The quality of Registry data might also not be sufficiently high to rely heavily upon it for fraud-and-abuse cases. This is ironic since the Registry was created, in part, to assist HCFA in pursuing fraud-and-abuse cases. As previously noted, the quality of several Registry data elements is low. The lack of sufficient quality of these data elements might result in the mis-identification of physicians during an investigation. While the probability of an incorrect identification of a physician is low and easily corrected, other problems may not be so easily rectified. A particularly vexing problem is, in some carrier areas, that PINs that appear on NCH claims do not appear in the Registry. For instance, fraud-and-abuse investigators might not feel confident that they have identified all of the NCH claims for the physician under investigation. The fact that some NCH claims without UPINs should indeed have them means that the investigators cannot use the Registry to find a linking PIN. Instead, investigators would have to obtain additional information directly from carriers. This problem, however, is not solely a problem with Registry data, but also in claims processing since carriers are placing other PINs on the claims. The fact that such problems arise could mean that carriers are not correctly interpreting HCFA's intentions in the *Medicare Carriers Manual*.

It thus appears that the quality of Registry data is sufficiently high for some types of behavioral research. The quality of Registry data might not be sufficiently high, however, to support fraud-and-abuse cases or to provide data validation for some Medicare payment policies.

1.0 INTRODUCTION

This report is the second produced for the HCFA project entitled: *Understanding Properties of the UPIN for Claims-Based Research.* It represents the fourth report produced by Health Economics Research, Inc. (HER) on the integrity of Physician Registry data and the research properties of the Unique Physician Identification Number (UPIN). The rest of this introduction provides background on the establishment of the Physician Registry, UPINs, the specific tasks for the current study, and an overview on how the research results might be useful to operations personnel, policy-makers, and behavioral researchers.

In response to a Congressional mandate (P.L. 99-272), the *Physician Registry* was established in 1989 by HCFA. Administration of the Registry was contracted to Transamerica Occidental Life Insurance Company (TOLIC). The primary purpose of the Registry is to issue a UPIN to each physician billing Medicare for services provided to its beneficiaries. This one UPIN should then be used by the physician during his/her entire lifetime association with the Medicare program.

Each Part B Medicare carrier had developed its own physician identification numbers (PINs) for their local billing and claims processing systems. In consequence, prior to the establishment of the Registry, there was not a unique national Medicare identification number for each Part B physician. (The term *physician*, for the purpose of Medicare payment, refers to medical doctors [including osteopaths], doctors of dental medicine and dental surgery, chiropractors, optometrists, and podiatrists.) The lack of a unique Medicare PIN meant that individual physicians could not be readily identified creating numerous analytic and administrative challenges. For example, the inability to uniquely identify physicians hindered HCFA's efforts to avoid duplicate Part B billings by interns and residents for services that were also paid as Part A hospital services to a teaching hospital. The lack of unique PINs also hindered efforts to detect fraud and abuse and to effectively conduct quality assurance studies. In addition to operational issues, studies of physician behavioral responses to Medicare policy changes were limited because individual physicians could not be reliably identified. UPINs were created in the expectation of overcoming these deficiencies.

The establishment of the Registry involved the coordination and integration of information from Medicare carriers. This was but one of the important operational changes

made to the claims-processing system during the late 1980s. Starting in the late 1980s and finishing during the early 1990s, Medicare carriers were required to enter into one of the new shared-processing systems. These systems were designed to increase standardization of provider files and claims processing. In January 1994, HHS awarded the contract for design of the new Medicare Transaction System (MTS) to GTE Government Systems Corp. Operations are expected to begin in 1999. When the MTS is fully operational, claims-processing responsibility will be consolidated and standardized at considerable savings in administrative resources. Claims processing under the MTS, thus, will be in total contrast to the de-centralized claims-processing system serviced by 36 Part B carriers in nearly 60 geographic units that prevailed in 1985.

HCFA and HCFA-contracted studies, including those performed by Health Economics Research, Inc. (HER), have previously documented numerous deficiencies in Registry data, the apparent absence of performing and referring UPINs on claims, and the lack of consistency in the coding between data elements in the Registry file and in NCH data. While the recent retrospective editing of Registry data promises to alleviate some of the current concerns regarding the reliability of UPIN data, inconsistencies between the Registry file and NCH claims remain.[1]

HCFA contracted with HER to extend and deepen HCFA's understanding of the quality of the Registry's data and of the limitations of physician-based claims data under the new UPIN system. Specifically, major tasks of this study are to:

1. discover problems Peer Review Organizations (PROs) encounter when conducting studies relying on UPINs;

2. in preparation for carrier interviews, document problems encountered when using Registry data in conjunction with Medicare claims data;

3. collect carrier-maintained data in order to perform data validation studies;

4. develop professional and practice profiles of low- and high-volume physicians to provide a contextual background with which to assess data collected directly from high-volume physicians;

[1]During 1994 through 1996, HCFA instructed carriers to correct the deficiencies. This included obtaining valid values, for each physician's active practice settings, for those data elements with incorrect or missing values.

5. conduct interviews with carriers to extend HCFA's understanding of the impact of carrier operations on UPIN-related Registry and NCH data;

6. perform studies of referring UPIN reporting;

7. conduct interviews with state license boards to understand issues in working with license numbers and with the boards themselves to exchange information on physician credentials; and

8. perform analyses on Registry data elements not hitherto examined and new analyses of Registry and claims data that rely on knowledge gained from the interviews and data collection efforts.

The results from the third, seventh, and eighth tasks are presented in this report. The results for the other tasks were presented in the *Interim Report* for this study.

The results from these analyses should be useful to operations personnel, administrators, policy-makers, and behavioral researchers. For instance, although the duties of existing claims-processing contractors under MTS will change, contractors will still have an important role in Medicare payment and related operations. Specifically, these results should help GTE and the new MTS contractor design better edits for both claims and Registry data in order to attain greater data accuracy and fewer inconsistencies than has hitherto been the case.

In addition to affecting behavioral research and carrier operations, some of the results of this study might provide useful information that could affect physician payment methodology. For instance, clinical laboratory services, services that are often referred, are currently apportioned to nonsurgical services in the growth calculations for the Medicare Volume Performance Standards (MVPS). Clearly, however, surgeons also order clinical laboratory services. Thus the current policy may be inequitable to non-surgeons. If HCFA deems current *referring* UPIN reporting sufficiently reliable for policy purposes, distributing clinical laboratory services on the basis of referring UPINs in place of current policy could affect MVPS limits. Changes in MVPS limits, in turn, might affect the distributive impact of the Medicare Fee Schedule (MFS).

2.0 STATE LICENSING BOARD

2.1 Purpose

The primary purposes of our interviews were to learn more about the process used to assign the state license number, to assess the useability of the state license number as a unique identifier for physicians and other health professionals, and to assess the reliability of the data maintained in the state licensure files. We inquired about the policies and procedures the state licensing boards follow to issue and regulate state license numbers. A better understanding of their operations would facilitate the evaluation of the quality of the state licensing board's data (license numbers) which are used by Medicare carriers and the Physician Registry to identify physicians. Of particular interest was the process of assigning state license numbers, the format of the license number, and the maintenance and updating of the licensure information. In addition, the communication among providers, Medicare carriers, and the state licensing boards was examined to provide a better understanding of the flow of information and how it might be improved through high-technology methods. We use information gathered from telephone interviews with eighteen state licensing boards to draw conclusions about these issues.

2.2 Methodology

In selecting the states, we chose states to represent a spectrum of technology and licensing operations. As a result of our previous work in conducting interviews with Medicare carriers to assess issues related to the Medicare's Unique Provider Identification Number (UPIN), we were able to identify states for which we had done claims data analysis as well as those states which have boards that possibly have parallel numbering systems. The states also were chosen to achieve geographic dispersion.

2.2.1 Selected Boards

A total of ten states were chosen and nineteen boards were initially selected to interview. Medical boards were selected for all ten states, one osteopathic board, and eight

non-physician or limited license practitioner boards were identified among three of the selected states. We considered all of the provider types currently represented in the Registry. The following is a list of the medical boards we selected and surveyed:

- Utah Department of Occupational and Professional Licensing
- Wisconsin Department of Regulation and Licensing
- Florida Board of Medicine
- Washington State Board of Medicine
- Massachusetts Board of Registration in Medicine
- Medical Board of California
- Texas State Board of Medical Examiners
- Maryland Board of Physician Quality Assurance
- Alabama State Board of Medical Examiners
- Alabama Board of Osteopathic Medicine

The following is a list of non-physician (NPP) and limited license practitioner (LLP) boards we surveyed:

- Alabama Board of Dental Medicine
- Alabama Board of Physical Therapy
- Florida Board of Podiatric Medicine
- Florida Board of Chiropractic Medicine
- Florida Board of Optometry
- Texas State Board of Clinical Psychologist
- Texas State Board of Social Work Examiners
- Texas State Board of Nurse Examiners

We contacted the nineteen boards by telephone to request an interview. Most of the state licensing boards were generally receptive in agreeing to provide time for an interview and the interview was scheduled within a reasonable time period, typically a week. However, one of the medical boards that agreed to an interview notified us at the last minute that they would not be available for another month. In the interest of time, seeking an alternate was not

pursued. During the interview, one of the medical boards, Wisconsin, completed half of the interview. Therefore, we obtained information from nine medical boards (with one partially completed) and nine NPP and LLP boards for a total of eighteen interviews.

2.2.2 Conduct of Interviews

The interviews were conducted with personnel at the level of director, manager, administrator, or executive secretary. The boards vary in their personnel size, from some with only a staff of two to boards like Maryland Medical and Massachusetts Medical which have approximately 60 staff handling all aspects of the licensing process. Some of the medical boards issue and regulate licenses for only M.D.s, while other medical boards process licenses for osteopathic physicians and physician assistants, in addition to M.D.s.

The interviews took, on average, forty-five minutes to one hour. In the interest of the board's time and in consideration of the boards with a staff of two, we did not always request extensive information on some of the questions. For example, with regard to required documentation for verification of an applicant's qualifications, we looked for key documentation items which gave us a flavor of the evidence the boards examined to approve and maintain a license. With regard to their data base systems, most of the boards did not have data processing staff available to provide technical details. We obtained only general information on their current use of technology. Our questions varied for the NPP and LLP boards versus the medical boards. In addition, questions were tailored for those states for whom we had conducted claims data analysis.

2.2.3 Issues Addressed During the Interviews

Topic Outlines were developed addressing six issues to be discussed with the boards, with questions varying for the NPP and LLP boards versus the medical boards. The Topic Outlines were mailed to all of the state license boards prior to our discussions for their preparation and review. The principal topic outline we designed, shown in Appendix A, covers six main issues: (1) the process of assigning state license numbers; (2) the format of the license number; (3) the maintenance of the licensure information; (4) the interface between state

license boards and the Medicare carriers; (5) the relationship with other professional boards within the state; and lastly (6) future plans for technology advancement.

The issue of assigning license numbers included questions about whether the state boards make an inquiry to other state licensing boards to assess licensing status in other jurisdictions. Do they assign temporary numbers, and if so, what is the role of temporary numbers and how are they used? Do the states use computers to assign license numbers or are numbers manually assigned? How sophisticated is their system, for example, does it automatically identify expired licenses? Does it automatically suspend a license upon failure of paying the renewal fee? How does the board protect the integrity of the license number as a unique identifier? Is a suspended, deactivated, or revoked license number ever reissued, and is it only reissued, to the original holder? How do state boards maintain historical licensure data? And, how long do inactive license numbers remain in the database?

Questions surrounding the format of the state license numbers sought to solicit information about how they created and maintain their license numbering system. Are the numbers limited to numerics or do they contain other characters? Are they sequential or is there intelligence built into the number that identifies the clinician's degree, the date of issue, or other identifiers? Are the numbers manually assigned or system generated? Have there been any changes in the numbering system over the years, and if so, how have they been implemented? Information regarding this question could assist in identifying older records in the Registry, or could explain why multiple providers have what appear to be the same license number.

The discussion of the interface between the state boards and Medicare carriers and others speaks to the flow of licensure information and allows us to assess how up-to-date are the carriers' provider files. How does the carrier query the board for information? What information is available to the carrier and others? Are data updates automatically communicated to the carrier?

Licensure file maintenance questions covered the issue of the accuracy and timeliness of the data. How often are the files updated? Are there instances when a professional with a valid license will not show up on the files? Or instances where a professional with an inactive license will appear in the data files as active? Under what circumstances could the same professional have different state license numbers? Does the board allow public access to their

database files? How are the files accessed? What is the best means of accessing the most up-to-date information? How do the boards notify users of changes in the licensure files?

In the interest of understanding the implications of carriers using the license number to assign their own provider identification number, we asked the boards if they had working relationships with other professional state boards. Do they adopt common policies regarding their license numbering system? Do they exchange information with other boards?

And lastly, we wanted to know what the state license boards' current data processing situation is and what plans, if any, do they have for technological advancement. This is of interest to the study of how the communications and data processing infrastructure can be used to support improved flow of information with carriers and others outside the board.

2.3 Findings

The findings are presented in a consolidated format rather than by each individual state license board and are discussed by topic issue. Detailed information gathered from the interviews for all eighteen license boards are presented under each topic area and shown in Tables 2-1 through 2-12. Tables 2-1 through 2-6 report information for the medical boards, while Tables 2-7 through 2-12 report information for non-physician provider and limited license practitioner boards.

Upon completion of the interviews, it seemed clear that there are many similarities among the 18 boards in all of the topic issues covering credentialling, primary source verification, renewal policies, license numbering system, and their methods of data query. The size and level of resources available to each board clearly has an impact on the scope of their operation and the sophistication of their data processing systems.

The Federation of State Medical Boards (FSMB) was discovered to be a key player in all of the boards' credentialling procedures. The Federation of State Medical Boards is the representative body and forum for physician licensing and disciplinary boards. It serves as the primary center for collecting, maintaining, and reporting disciplinary actions taken against physicians by its member boards and other governmental authorities. This service is provided through the Federation's nationally recognized Board Action Data Bank.

It is important to note that because we have no ability to detect how the boards are actually conducting verification of qualifications and how their data processing systems

actually function, it is difficult to assess how well the boards are performing. Therefore, in-depth knowledge of the integrity of the data base and the implications for license number integrity are not fully known.

We also learned during the interview process that many boards are under an "umbrella agency" which oversees the processing of licenses for each separate health professional board. However, each board operates independently with little or no sharing of license numbering systems. The state of Utah is the one exception. They do coordinate their numbering systems. For all other states, the lack of coordination could result in the issuance of the same license number to two or more different provider types, e.g., M.D. and R.N.

And, lastly, we learned that to focus on the license "number" as the core of their system is not really appropriate. The state licensing boards' missions and responsibilities are to comply with the Medical Practice Acts of their state and ensure for the public that the professional they license is legally qualified to practice medicine. The license number is generally viewed as a means by which to confirm to outside entities that the provider has a valid license. In responding to a query about a provider, the boards require more than just a license number to access their files. The boards do not use the license number as a unique identifier, but rather, they tend to use a combination of other identifiers, such as name, date of birth, and social security number.

2.3.1 Assigning State License Numbers

The first issue addressed in our interviews was the process used to assign state license numbers. The responses are reported in Table 2-1 for the medical boards and in Table 2-7 for the non-physician providers' (NPPs) and limited license practitioners' (LLPs) licensing boards. Every board stated emphatically that their mission is to issue and regulate licenses and that to focus on the license number as an identification system is not really appropriate. They do not think in terms of issuing a "number," but rather in terms of issuing a license to practice in compliance with the Medical Practice Act and ensuring the integrity of the license through their operational policies.

We first asked if they perform primary source verification and what documentation do they require to verify that the applicant is qualified to be issued a license. All of the boards conduct primary source verification which is defined as follows: primary source verification is

receiving official documents directly from the source and not from the applicant. The applicant in most cases is required to contact the source (school, references, out-of -state boards) and request that the documentation be sent directly to the board.

We explored issues surrounding how the board verifies that an applicant is qualified to receive a license to practice medicine in their state. We looked for the critical documentation required to issue a license in lieu of an exhaustive list and, therefore, may not have obtained the complete list of requirements from each board. However, we feel we received sufficient evidence of key items.

We found that the majority of the boards look for and require similar documentation. It doesn't appear that there is comparison of information across different sources of data, though some key documents are verified as being originals by some boards, while other boards cross-reference information from different sources. For example, California checks fingerprints via the State Department and the FBI. The Utah Medical Board stated many schools now are issuing 'sealed' certificates that prevent the certificate from being copied. The majority of the boards verify disciplinary status information with the Federation of State Medical Boards (FSMB), in addition to querying the National Practitioner Data Bank.

All of the application forms request that the applicant list all active and inactive licenses in- and out-of-state, including Canada and Puerto Rico. The applicant contacts the out-of-state boards and requests that the documentation be sent directly to the in-state board. If the documentation is not received, some of the boards will query the out-of-state board. Others will request that the applicant make the query. California performs a double check with the FSMB to confirm that the applicant's disciplinary status is in good standing. The boards are looking for evidence of disciplinary action. A copy of the out-of-state license is kept on file along with any other documentation. However, the license number of the out-of-state license is not of interest to the boards and is not used in any way. It is important to note that state boards do not routinely query other state boards to look for evidence of previous licensure that has gone unreported by the applicant.

Temporary licenses are assigned by eight out of the eighteen boards interviewed. The Texas Board of Social Workers will issue a temporary license for six months to qualified applicants who haven't yet completed the exam, while other boards will grant up to 90 days to complete the examination. If exams are completed within the relevant time frame, the 'temporary' number tends to become the permanent number. In contrast, the Massachusetts

Medical Board only allows temporary licenses for camp doctors or "eminent" physicians to teach at a university.

There was a slight difference between the medical boards and some of the NPP and LLP boards with regard to how long they validate a license. The majority of the medical boards validate a license for up to two years, while many of the NPP and LLP boards validate for only one year. All of the boards seem to have a systematic way of identifying expired licenses for renewal. Their computers generate renewal notices based on their respective renewal policy. For example, some boards renew licenses two years from the date of issue while others renew two years from the birth month. Utah designates a specific renewal month for each separate board. In accordance with all of the boards, the licensee must maintain a current registration in order to legally continue to practice.

In order to renew a license, the licensee must meet continuing education requirements and pay a renewal fee. In addition to continuing education, the Florida Medical Board requires physicians to sign and return an affidavit for completed courses on AIDS and domestic violence. In lieu of requesting documentation for every renewal, all of the boards conduct random audits to validate continuing education. The audited licensee must submit documented evidence of completing the required educational courses.

If the licensee does not meet the continuing education requirements or pay the renewal fee, the license is put in an inactive status. All of the boards have a time limit applied to these non-renewed licenses. If the license is renewed after this time limit, the licensee must essentially reapply and follow the application procedures. According to the majority of the boards, the original licensee number will reissued or reactivated. They stated that the license number is the licensee's number for "life." However, we identified four boards whose renewal policy is to issue a new license number, if the licensee fails to pay the renewal fee for two renewal cycles. The licensee must reapply and would be issued a new number. Thus, the same person may have multiple license numbers over time. It appears that the licensee is encouraged by many boards to renew, i.e., pay the renewal fee, even if he/she is not actively practicing.

Each board has a means of identifying the status of a physician's license in their system. The systems may vary from a suffix in the status field (I=inactive, P=probation, N=non-renewal, A=active) to comments in a remark screen. Some of the boards maintain historical data on-line. For example, if the status shows active today yet there was a disciplinary status

last week, the on-line files would indicate prior disciplinary status. For more detailed information, the paper file would have to be accessed. For those boards that do not maintain history on-line, an inquirer who does not request further information would only learn of the most current status.

The boards do vary in how they define the status of a license. For example, the status of a physician who has been sanctioned is defined by one board as "probation" and by another board as "disciplined." A physician who has not yet paid the renewal fee is defined as delinquent by one board, while another board uses "non-payment." Boards also differ in their policies regarding failure to maintain a current registration. In one state, it can lead to cancellation, while in another state the license is considered inactive.

The consensus with most of the boards is that typically a license number remains in their data base indefinitely and is never deleted from the data base. There were a couple of exceptions cited. The Florida Medical Board stated that a null and void license (delinquent due to non-payment) would be purged after five years and stored on microfiche. The Alabama Dental Board purges their files of inactive licenses yearly. They stated the majority have moved out-of-state and do not reapply for licensure. The Alabama Physical Therapy Board deletes license numbers only in the event of death.

With regard to the question surrounding the integrity of the license number as a unique identifier, the majority of the medical boards conveyed that it would be rare to have a circumstance where the same professional has different license numbers in their data base. Different license numbers could be in a state's data base for a licensee because of the renewal policy of some boards and not due to data errors. In contrast, there is a greater probability of NPPs and LLPs having multiple license numbers. The Texas Board of Psychology, Florida's Boards of Podiatry, Chiropractic and Optometry and, lastly, Alabama's Board of Physical Therapy issue a new license number when a licensee fails to renew after one or more renewal cycles. However, only one of the license numbers would be current in their respective data bases. Many of the boards felt that distinguishing between two individuals with similar names and other similar characteristics is not a problem. It seems that most of the boards use a combination of name, date of birth, social security number, and school graduation date to uniquely identify individuals. Many of the boards tend to access their files with the social security number more so than with the license number. The implication here is that their

license numbering system is not failsafe as a unique identifying system and that the useability of the license number as a unique identifier is not clear.

2.3.2 State License Number Format

The next series of questions addressed issues related to the format of state license numbers. Of particular importance is whether or not intelligence is built into the numbering systems that would allow for logical checks of the validity of the number by data users. Tables 2-2 and 2-8 contain the boards' detailed answers for the medical and NPP/LLP boards, respectively.

It appears that the boards are very similar in their numbering system. All license numbers are issued sequentially. Half the boards use all numbers, while the other half use a combination of numbers and letters. Only four of the medical boards have intelligence built into their license number: Utah, Florida, Washington, and Alabama. Utah uses the year the license is initially issued as the first two digits, the next six digits are unique to the provider, and the last four digits delineate the provider's specialty. For example, if the license is issued in 1996, the first two digits are 96 and remain that indefinitely. The Florida and Washington Medical Boards and Alabama's Osteopathy Board use the first two digits to specify the provider's degree with the remaining numbers assigned sequentially. Several of the NPP and LLP boards have intelligence built into their license numbers. The format is a combination of letters and numbers with the first two letters designating the type of provider, e.g., podiatry, or degree, e.g., master degree, with the remaining numbers assigned in sequential order.

The license number formats have remained constant for the majority of the license boards. There have been changes within the last five years in the license number format for three of the larger medical boards: Utah, Massachusetts, and Maryland. The changes have all been to increase the length of the number. Older records have been changed to reflect the new format. Only one non-physician board has changed their license format. Information gathered about the history of changes in the license format relied on the interviewees' historical knowledge, which was not always extensive. As our ability to probe and inquire beyond the interview was limited and our interview time and follow-ups were restricted by the availability of the boards, it was difficult to obtain a sense of how thorough was their historical knowledge.

The majority of the boards assign license numbers through their computer system, a change from several decades ago. An exception is Alabama. All of Alabama's Boards manually assign license numbers. The Alabama Board of Physical Therapy's licenses are preprinted with the license number. Massachusetts is unique in that they have preprinted licenses and the computer activates the license number when it is entered on-line.

California's Medical Board has been computerized since 1960 and Texas' Medical Board since 1978. In the 1980s, all of Utah's Boards, Maryland's Medical Board, and Texas' non-physician Boards converted from a manual to a computer system, and in the early 1990s, the Florida and Washington Boards implemented their computer systems. Massachusetts just converted to a computerized system in October of 1995.

The majority of the boards claim to have the capacity to ensure accurate data entry. However, when questioned further, many boards were somewhat vague as to the level of rigor they impose on validating their data. For all the boards whose computer systems assign the license number, they stated that their system will issue a number only once. Some of the boards' computer systems actually search and perform a level of quality control to ensure that the number isn't already in use. Maryland's data base is indexed on the license number and, if a number has already been assigned a licensee, it will flag that person's file.

For most of the boards, the social security number, date of birth, and name are entered as the key data to uniquely identify the licensee and are viewed as key data elements. The Texas Nursing Board tries to use either the license number or social security number to access the system instead of the name to avoid confusion. The technique for verifying the accuracy of data varies across the boards. Massachusetts' data entering system requires that the licensees' name, city, and state be entered twice to verify accuracy of the entered data. Other boards do manual inspection of key data elements. Without having more in-depth knowledge of the specific edits their systems perform, it is difficult to assess the integrity of the data contained in the license numbering system.

2.3.3 Interface Between State Licensing Boards and Medicare Carriers/Others

An important issue to Medicare is, how accurate is information maintained by its carriers on practitioners actively providing services to Medicare beneficiaries? Is the nature of the interface between Medicare carriers and state licensing boards one that fosters timely

transmission of changes in the practitioner's license status, especially disciplinary status? The general conclusion we draw is no. Data that led us to this conclusion are reported in Tables 2-3 and 2-9.

It appears that Medicare carriers are treated no differently than any other public inquirer. Information on physician license status is not automatically sent to Medicare carrier or others unless they request it. The licensing boards viewed their role as one of assuring practitioners meet the standards established within their respective Medical Practice Act, and not as an information clearing house. In fairness to the boards, some operate with very few employees and small budgets, thereby limiting the practical scope of their work.

Medicare carriers, hospitals, HMOs, and other public inquirers can call, write, or access on-line information from the state licensing boards depending upon the type of access the board provides. The extent of the licensee information available to an inquirer may differ from board to board. For example, the Texas Board of Psychologists will not give out the issue date or the expiration date of a license, or the licensee's social security number. In many states, the licensee must give written permission to the board in order for the board to give out detailed information regarding complaints or sanctioning action against the licensee. Some of the boards limit the number of inquiries to a maximum number per phone call. Many of the boards, for a fee, will provide customers with customized output in the form of hard copy listings, electronic listings, or data bases.

Many of the boards have overnight cycles to update licensure information, but this updated information may not be readily transferred to other parties. For example, Maryland has a favored customer listing and automatically sends updated license information to their listed customers for a fee. The Washington State Medical Board automatically notifies hospitals, the AMA, and the FSMB about a licensee's disciplinary status. Otherwise, Medicare carriers and all other public inquirers must initiate the contact to the boards to obtain information about the status of a licensee, or changes in status.

The boards clearly see their relationship with their "customers," out-of-state boards, hospitals, HMOs, Medicare carriers, and other professional boards, as providers of requested licensee information, only as opposed to routine updating of the entire data repository. There was little information offered on how to improve upon communication except perhaps to ease accessing the information. Many boards are exploring the use of the Internet for on-line access.

The degree to which Medicare carriers will access an on-line service to update their providers files is not known, however.

2.3.4 License File Maintenance

We inquired about how the licensure information is stored and maintained. The responses to this series of questions are displayed in Table 2-4 and 2-10. All of the boards maintain their license information on-line, 'real-time.' Some of the boards maintain historical data on-line as well. Paper files must be accessed for some of the boards in order to provide historical information to the inquirer. All of the medical boards update their files daily for name and address changes, which are required to be submitted in writing. Disciplinary status is always kept current. For most of the boards, updates to the files for any other information are done at renewal time.

All of the boards felt that their files accurately reflect the licensee's status. The Florida Medical Board was the only board that indicated if the file had not yet been updated via the overnight cycle then yes there may be an instance, though rare, that a professional with a valid license may not be on the file. Of course, there is a lag time between receipt of an application and granting of a license. Further, boards with a small number of staff members suggested that data entry could be delayed at times, thereby, increasing the time between receipt of information and updating of their files.

Ten of the eighteen boards interviewed provide public access to their on-line files. Many noted that the licensure information provided is information which is within the confines of the state's privacy act regulations. Records considered 'open' are usually available to the public. For some boards, ongoing investigation information is not available to the public. California does not give out 'complaint' information on a licensee which is in accordance with their state regulations.

The various forms of access are identified in Table 2-4 for the medical boards and Table 2-10 for the NPP and LLP boards. The Internet and direct on-line access seem to be the most common types of query. Again, many of these files have been downloaded specifically for public access and the information is limited, thereby protecting the privacy of the licensee. For example, disciplinary status is identified on-line, but more detailed information must be requested by the inquirer in writing. Since some of the boards limit the extent of the

information available and only some maintain historical data on-line, if an inquirer wants more information they must call or write. The implication is that information requested, especially regarding disciplinary actions, may not always be thorough because the data may be limited and not historical.

2.3.5 Relationship With Other Professional In-State Boards

Because multiple types of providers are contained in the UPIN Registry, we asked the state boards about their interaction with other boards in their state. To what degree do they share information, policies, and operations? Only three states actually adopt and share some common policies: Utah, Washington, and Texas. The answers are displayed in Tables 2-5 and 2-11. All of the medical and NPP and LLP boards in the state of Utah are managed and operated by the same office and share the same numbering system as well as most other operating procedures. This streamlines operations and increases uniformity in the licensing process across provider types. Further, because Utah has intelligence built into its license numbers and only one agency assigns licenses, there is very little chance that two different types of providers are assigned the same number. The Medical Board of Washington State shares its numbering system with some of the other state non-physician boards, and the Texas Medical Board looks at common issues through the State's uniform board members' training program.

The other medical boards and most of the non-physician boards stated that their relationship with other in-state boards is simply exchanging licensure information and not in exchanging policies and procedures. All of these boards operate separately even though they may be under an "umbrella" agency. Very few adopt common policies. Although they may share ideas for system improvement, many of them are on separate computer systems. Thus, there may be different degrees of rigor applied to processing applications, assuring accurate data are entered in the licensing data base, and conducting quality review.

2.3.6 Future Plans For Technology Advancement

The current level of sophistication of computer systems and future plans for system technology vary across the boards (Tables 2-6 and 2-12). All of Alabama's boards issue their

license numbers manually with no plans for future technology. Many of their boards do not have the volume of inquiries that larger medical boards process. The Texas Medical Board is currently DOS-based, but they're trying to update to a graphic user interface with the hopes of posting information to a WEB page on the Internet. The Texas Board of Clinical Psychology will use a new IBM rules-driven program. This program is designed based on the board's license requirements (rules) and doesn't allow the assignment of a license unless the candidate's information entered into the system meets the "rules" set forth in the data base program. Massachusetts has just gone to a computerized system in 1995 and is posting information to a WEB site in September 1996. California is working on enhancing their system in the interest of allowing public access to license information. Washington's Medical Board, which is on-line via the Internet, has no future technology plans. Utah is trying to streamline their system. All the state licensing boards in the state of Utah are on the same system. They stated that the Federation of State Medical Boards is proposing to go on-line with all medical boards and this is earmarked for January 1997. Maryland's Medical Board is currently working on their system, Physician Information Request Reporting System (PIRRS), to automate historical data which is now kept on microfiche and to allow public access to their licensing information based on different levels of security. They are also actively sharing their system/ideas with several states. They stated that the Ohio Medical Board is initiating a regional consortium of states to develop common licensing standards and procedures.

It does appear that most boards, if they have the capabilities, are more than willing to provide information electronically or in any other form helpful to the "customer." Such a move should allow for more frequent updating of provider files maintained by entities, such as Medicare carriers. On-line access to a large number of medical boards should also allow users to more easily confirm information reported on an application, or to confirm absence of information, i.e., current or past license not reported on the application. All these efforts would greatly improve the timeliness of data abstracted from the state license files.

2.4 Discussion

The primary purpose of our interviews was to assess the reliability of data maintained in state licensing boards' files as well as assessing the useability of the state license number as a unique identifier. By examining the policies and procedures of the selected boards, we were

able to cull information about the reliability of licensure information. By examining the process for assigning license numbers and the format of the license numbers across multiple boards within the same state, we are now able to draw conclusions about the useability of the license number as a unique identifier.

The information gathered from these interviews has also allowed us to more critically examine data contained in the Physician Registry. As discussed in an earlier report,[1] we discovered instances where there are multiple UPINs assigned to a single state license number. We purposefully selected three states, which appeared to have this particular "data problem," and asked the respective boards to provide their opinions as to why this might occur within their state. In general, the boards were unable to provide explanations primarily because they are unaware of the process that Medicare carriers and the Registry use to exchange information and to make UPIN assignments. We believe the information gathered directly from the boards and summarized below allows us to develop reasonable explanations for a single state license number being associated with multiple UPINs. We provide these explanations after discussing our findings.

The primary mission and responsibility of all state licensing boards for all types of providers is to assure compliance with the applicable Medical Practice Act of their state by ensuring that the professional they license is legally qualified to practice medicine or their profession. To the extent that they are required to update their licensure information to reflect changes in a name or address, the issuance of sanctions, or completion of continuing education requirements, they do so. Although the boards understood the importance of their licensure information to insurers, including Medicare carriers, the boards did not view dissemination of this information as a primary responsibility. Limited staffing is a major factor in the boards focusing upon issuing licenses, rather than sharing licensure information. Current technological efforts are primarily devoted to improving the efficiency and accuracy of processing applications and, secondly, to reducing the information exchange burden on the staff.

Several findings relevant to the reliability and quality of licensure data emerged from our examination of policies and operational procedures of the selected boards for processing

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[1] Health Economics Research, Inc. *Understanding Properties of the UPIN for Claims-Based Research, Final Interim Report.* Prepared under HCFA Master Contract No. 500-92-0020. October 1996.

applications and assigning licenses and license numbers. The first is that very few states coordinate the activities of their various professional licensing boards either within or across states. Nor do they use the same data processing systems, number formats, or user interface procedures. As a simple example, each of the professional boards we interviewed in Texas has a different number of digits in its license number: the Medical Board uses a 5 digit number; the Clinical Psychology Board uses a 4 digit number; the Clinical Social Worker Board uses an 8 digit number; and the CRNA Board uses a 6 digit number.

The implication is that users of licensing board information, such as Medicare carriers, must maintain an extensive listing of board-specific information and be very attentive to detail when receiving and processing information from such a wide variety of sources. This clearly increases the burden on users to obtain and process information and increases the likelihood of data errors occurring during transfer from the board to the user. Using Texas as an example, we highlight a number of errors that could easily occur during the transfer of a license number between the Medicare carrier and any particular board. Let's say the carrier has established in its provider file an 8 digit field to accommodate the largest license number they will receive from any of the Texas boards. The Medical Board reports the number 11111 for a new physician. If care is not exercised, this number could be entered into the carrier's data base as either 00011111 or 11111000. Two very different numbers. Or, the CRNA Board reports the number 2 for a newly licensed CRNA. Is this number 000002 or 200000? Without detailed rules for justification and zero-filling numbers when reporting data, errors will occur during transfer.

Lastly, the quality, reliability, and timeliness of the data in the licensure files appear to be dependent, in part, upon staff and technology availability, which varies across the states and across boards within states. Some boards have only two employees while others have over 60 employees. Therefore, the time between the submission of an application and the issuance of a license and the updating of the licensure file is likely to vary. The degree to which quality control checks are performed on the data in the licensure files also varies across boards. Some boards confirm the accuracy of only data entry by double keying the applicant's name and address, while other boards perform extensive logical edits of data received during the credentialling process. To the extent that data errors go undetected by the boards, they will be transferred on to users, such as Medicare carriers.

There were several key findings obtained during the course of the interviews that have important implications for using the license number as a unique identifier. First, and most importantly, the boards universally use information other than the license number to identify individuals in their application process and in their data bases. In general, the boards rely on the social security number as the primary identifier and use information such as name, date of birth and year of graduation from medical school as secondary identifiers. Most use a combination of variables to ensure accurate identification of an individual. We believe the boards' lack of reliance on their own issued license number as an identifier sends a strong message that consideration should be given to other identifiers, such as social security number.

We also learned that many of the boards assign license numbers using a sequential numbering system and that most of the numbering systems lack intelligence. Thus, different individuals could have the same license number within a state, if they are different types of providers. For example, Dr. Jones, an internist, and Dr. Smith, a clinical psychologist, could both have the same license number within a given state. The most failsafe numbering system appears to be one in which the individual's profession is part of the license number. In Florida all chiropractors have license numbers that begin with "CH" and all optometrists have license numbers that begin with "OP." This type of numbering system prevents assignment of the same number to different individuals of different professions.

The likelihood of the same individual having multiple license numbers at the same time appears to be limited. Most boards appear to be diligent in changing the status of license numbers, when they become inactive for whatever reason. Further, because the boards typically search their data base looking for a current record for an applicant prior to creating a new record, the possibility of the same individual appearing twice in a data base and being assigned multiple numbers appears unlikely. However, the same individual practicing in several states at one time will have multiple license numbers, one for each state in which there is a current license. Thus, in the UPIN Registry, physicians could have multiple license numbers. But they should still have only one per state, and, in most cases, one per carrier.

The likelihood of the same individual having multiple license numbers over a period of time appears to be somewhat greater. As practitioners move across state lines over the course of their professional life, they will obtain multiple license numbers. Within a state, the likelihood of an individual having multiple numbers over a period of time is less, but differs by type of provider. Many state medical boards assign a particular license number to one

individual for his/her use for life. When a license expires or is revoked or a professional retires or dies, the license number is typically decommissioned. If the same physician requests re-instatement of his/her license, the previous number is re-activated. The NPP and LLP boards are less likely to follow this procedure. A fair number of our interviewees stated that they issue a new license number to a previously licensed professional whose license has lapsed. Thus, central data bases of information, such as the UPIN Physician Registry, must be updated regularly to reflect changing license numbers. For example, if care is not exercised in retiring inactive records in a timely manner, there is the possibility that multiple license numbers would exist concurrently for the same person. Multiple concurrent numbers could also come about from errors in uniquely identifying a professional, as when the wrong record is updated with another physician's new license number.

Using the information gathered from these interviews, we examined 1994 Physician Registry data for three states: Massachusetts, Alabama, and California. Specifically, we examined the number of UPINs per state license number. We had expected to find a one-to-one match within each state. In all three states, less than one percent of all UPINs were associated with more than one state license number.

A common reason for different UPINs being associated with what appears to be the same license number arises from the presence of different types of providers in the Registry, who legitimately have the same license number. We know from our interviews that many boards use sequential numbering systems that can be the same across different provider types within a state. This is what we observe in our data. For example, we observe in California's data three providers with the same license number, but different UPINs, PINs, names, dates of birth, and specialty codes. One is a chiropractor, another is a physician practicing as a member of a clinic or group practice, and the third is an optometrist. Similar findings appear in the Alabama and Massachusetts data as well.

We do discover several instances in which we cannot find any reasonable explanation for multiple UPINs appearing with the same license number. We observe most of the Registry data varying between the observations, with the noted exception of the license number. We hypothesize that the license number could have been erroneously submitted to the Registry, rather than a reformatting error once the license number was entered in the Registry data base. Re-issuance of the same license number to different individuals is another possibility.

Our interviews and these data findings suggest that a state license number, alone, is not a reliable identifier of unique individuals. But, when used in combination with other information, such as social security number, date of birth, and full name, the probability of uniquely identifying individuals increases. Our findings also suggest that great care should be exercised by all parties when transferring data and that assumptions regarding license number formats should not go unchallenged. As state boards examine the adoption of more sophisticated technology to aid in the processing of license applications and in the dissemination of information to users, an opportunity exists to standardize license number formats and operational policies and procedures across boards within a state as well as across states. This clearly would reduce confusion when using the state license numbers as an identifier.

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TABLE 2-1

ASSIGNING STATE LICENSE NUMBERS MEDICAL BOARDS

	Utah	Wisconsin	Florida	Washington
1 Do you perform primary source verification? [1]	Yes	Yes	Yes	Yes
2. What documentation do you require prior to issuing a license? [2]	• School transcript • Notarized diploma • 2 yrs. approved residence program with letter from director • Examinations • AMA Profile Form • FSMB Disciplinary action form [3] • NPDB Query [4]	• School transcript • Notarized diploma • 1 yr. Post Grad. training • AMA Profile Form • FSMB Disciplinary action form • Copy of any malpractice action	• Official school transcript • 2 ltrs. of recommendation from practicing MD's • AMA Profile Form • FSMB forms • Exam documentation	• School transcript • Post grad. training • AMA profile • FSMB Data Report • Hospital privileges • Board exam scores • National exam scores • NPDB query • Picture • Complete chronology
3 Do you verify whether the applicant has/had an out of-state license(s)?	Yes Applicant requests out-of-state license	Yes Applicant requests other state license	Yes Requests out-of-state information on application	Yes Applicant requests out-of-state license
4. Do you assign a temporary license number?	No	Yes (90 days)	No	Yes (90 days)
5. How long is a license valid?	2 yrs	2 yrs.	2 yrs	1 yr
6. How do you identify expired licenses up for renewal?	Computer identifies expired license Renewal notices are mailed	Renewal notices sent	Computer generated renewal notice	Computer generated renewal
7 Do you validate continuing education?	Yes Renewal notices indicated CE requirements Applicant must sign attesting req. satisfied Random audit required official certification	Yes Board verifies CE completed	Yes Signed affidavit confirming completion of CE courses	Yes Random audit
8 Is a suspended, inactive, or revoked license number ever reissued?	Yes	N/A	Yes	Yes
9 Is the license reissued with the original number?	Yes	Yes	Yes	Yes
10. How long do license numbers remain in your database?	Indefinitely	N/A	Indefinitely	Indefinitely
11 Are license numbers ever deleted from your database?	No	N/A	No Non-payment after 5 yrs. purged, retained on fiche	No 1905-1950 deleted
12. Could the same professional have different license numbers in your database?	Yes	N/A	Yes (infrequent case)	Yes Multiple credentials
13. Do you have problems in distinguishing between 2 individuals w/similar names and characteristics?	No Use SS#, DOB, school and year of graduation to uniquely identify	N/A	No Use SS#, DOB	No Use DOB, SS#, school

Notes

[1] Primary Source Verification. The Boards require, on the application, that the applicant make primary contact with the source (schools, out-of-state board, references) and request that the documentation be sent directly to the Board. The Boards do confirm and only accept documentation directly from the source.

[2] The list of documentation represents key requirements and may or may not include all Board requirements.

[3] Federal State Medical Board

[4] National Practitioner Data Bank

N/A = not available

Massachusetts	California	Texas	Maryland	Alabama	Alabama-Osteopathy
Yes	Yes	Yes	Yes	yes	Yes
• Official school transcript • National Board Scores • Complete 1 yr. Post Grad. Education; 2 yrs. foreign student • Ltrs. of verification of character • AMA Profile Form	• Original diploma • Official transcript • National Board scores • FSMB • Exams • AMA transcripts • Original signature verifying Post Grad. • Fingerprints-verified thru FBI-State Dept.	• Official transcript • Exam servs\documentation • Letters of reference • Doc. of Post Grad. training • Hospital privileges	• Uses American Association Medical College database listing to verify school • Post Graduate work • Ltrs of character, reference from practicing MD • Educational Council of Foreign Medical Graduates	• Official school transcript • Nat'l Board exam scores • Post Grad. Residence Program certified	• School transcript • Post grad. res. • National scores • Board certification
Yes	Yes Quenes other state boards Double checks with AMA and FSMB Applicant must provide answers on applic. form	Yes Receives verification from other state boards	Yes	Yes Query other states	Yes
Yes (eminent teaching)	No	Yes (90 days)	No	No	No
2 yrs.	2 yrs..	1 yr.	2 yrs.	1 yr.	1 year
Computer generated renewal notice	Computer identifies expired license Renewal notice sent	Computer identifies expired license	Computer identifies expired license	Computer identifies expired license	Computer
Yes Random audit	Yes Random audit, 1% of renewals must submit documentation	Yes Random audit to obtain documentation	Yes	Yes Random audit to obtain documentation	Yes Sample audit
Yes	Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes	Yes
Indefinitely	Indefinitely	Indefinitely	Indefinitely	Indefinitely	Indefinitely
No	No	No	No	No	No
No	No	No	No	No	No
No Use name, SS#, DOB uniquely identify	No	No Use name, SS#, DOB	No	No Use name, SS#, DOB	Rare Name, DOB, SS#

TABLE 2-2

STATE LICENSE NUMBER FORMAT: MEDICAL BOARDS

	Utah	Wisconsin	Florida	Washington
1. License Format:				
Character length	12	N/A	9 (2 letters & 7 numbers)	5
Numeric only	X			
Letters only			X	X
Numeric/Letters			ME0000001 [zero filled as needed]	MD00012345 [field length 8, zero fill 1st 3 positions]
Example				
2. Is there intelligence in license numbers?	Yes First 2 nos. = year license issued Next 6 nos. unique to individual All MDs same last 4 nos.	N/A	No	No
3 Are the numbers manually or system assigned?	System (1983)	N/A	System (1991)	System (1991)
4. Are they assigned sequentially?	Yes	N/A	Yes	Yes
5 How do you ensure the license number is unique to only the individual?	Computer issues number; only issued once	N/A	N/A	Computer issues number
6. Do you verify data entered for accuracy, missing information, logical values?	Yes	N/A	Yes Standard logical edits	Yes Standard logical edits
7. Have changes occurred in the license format?	Yes	N/A	No	No
Within 5 years	Increased 4 digits to 6 in 1991			
Over 5 years	X			No
1930-1950	Don't know		No	No
7a If changes, did you update old records with new number?	Yes Cross-referenced to old	N/A	N/A	N/A
Use both systems.	No			

* Pre-printed license; number is activated when entered into system

N/A = not available

Massachusetts	California	Texas	Maryland	Alabama	Alabama-Osteopathy
6 digits X	6 digits	5	8	5 X	5 digits
	X	X A9999, B0001	X		X D0123
No	No	No	No	No	Yes First 2 letters = type of provider
Manual* System (October 1995)	System (1960)	System (1978)	System (1989)	Manual	Manual
Yes	Yes	Yes	Yes	Yes	Yes Preprinted license
License number printed on license activated when entered	DOB, SS#	DOB, SS#	Database indexed on license numbers Systems scans for #. If already used, flags file	Address, school internship	Name, address, school
Yes Double system; name entered twice with city, state	Minor logical edits	Minor logical edits	Yes Strong emphasis on Q.C., mandatory fields	No	No
Yes Increased 4 digits to 6 in October, 1995 X No	No	No	Yes Increased length of # Teaching doctors back then may have different numbers	No	No No No
Yes No	N/A	No	Zero filled older records	No	N/A

TABLE 2-3

INTERFACE BETWEEN STATE BOARD AND MEDICARE CARRIERS/OTHERS: MEDICAL BOARDS

	Utah	Wisconsin	Florida	Washington
1. Is licenser information automatically sent to Medicare carrier?	No Carrier must initiate contact	N/A	No	No
2. How are changes communicated to the carriers?	Not done Carriers must initiate contact	N/A	Not done	Not done
3. How does the carrier query the license board?	Telephone Letter	N/A	Telephone Letter	Telephone Letter On-line via modem
4. Can you provide hard copy listings? What data is included?	Yes Name, license #,	N/A	Yes (fee) Programmed per customer request	Yes (fee) Name, status, license effective date, exp. date, license number
5 Can you provide electronic listings? What data is included?	N/A	N/A	Yes (fee) Programmed per customer request	Yes (fee) Name, status, license effective date, exp. date, license number
5a. Other types of data form	Looking at Internet	N/A	Internet	Voice mail
6. Do you have suggestions for areas of improvement	Like to use Internet with carriers	N/A	Not really	Encouraging voice mail
7. What other organizations do you interact with?	Hospitals HMOs Insurance companies Out-of-state boards	N/A	Hospitals HMOs Insurance companies Out-of-state boards	Hospitals HMOs Insurance companies

N/A = not available

Massachusetts	California	Texas	Maryland	Alabama	Alabama-Osteopathy
Yes, if already on files to receive data	No See #4	No See #4	Yes Carriers are on a Maryland Board favored customer list; pay to have information sent	No	No
Not done Carriers must initiate contact unless data on scheduled request	Not done Carrier must initiate contact	Not done Carrier must initiate contact	Not done Carrier must query for info unless it shows up on routine customer data request	Not done	Not done
Telephone Letter On-line access 999# phone #	Telephone Letter On-line ($ fee for access)	Telephone Letter On-line: use name or license number Working on e-mail	Telephone Letter	Telephone Letter On-line access	Telephone Letter On-line
Yes (fee) Programmers will provide per customer request	Yes (fee) Carrier can request specific data (within data processing capabilities) for a fee $	Yes (fee) Carrier can request specific data for a fee $	Yes (fee) Name, address DOB, Med School grad., license #	Yes (fee) Programmers will provide per customer request	Yes Per customer request
Yes (fee) Programmers will provide per customer request	Yes (fee) Carrier can request specific data (within data processing capabilities) for a fee $	Yes (fee) Carrier can request specific data for a fee $	Yes (fee) Name, address DOB, Med School grad , license #	N/A	N/A
CD-ROM -- Physician Profiles *	None	Sanction List Newsletter Floppy Disk Tape	Bulletin Board Disk Currently working on new Public Information System	None	None
Not really	Not really	Ongoing dialogue with major users	No	Not really	Not really
Hospitals HMOs Insurance companies Out-of-state boards	Hospitals Allied health professionals Out-of-state boards	Hospitals HMOs Insurance companies Out-of-state boards	Has customer listing	Insurance companies Hospitals, large Customer HMOs	Hospitals Insurance companies Out-of-state boards

* Physician Profiles include licensee information, e.g. malpractice, privileges, license number, etc

TABLE 2-4

LICENSE FILE MAINTENANCE. MEDICAL BOARDS

	Utah	Wisconsin	Florida	Washington
1. In what format is your license information maintained?	On-line Real-time Historical data	N/A	On-line	On-line
2. How often are your files updated?	Daily	N/A	Daily	Daily
3. Are there instances when a professional with a valid license is not on your files?	No	N/A	Yes Files not yet updated; overnight cycle	No
4. Are there instances when a practitioner with an inactive license will appear as active?	No *	N/A	No	No
5. Do you allow public access to your database?	No Internet doesn't link with comp. files, separate system Home Page	N/A	Yes Internet	Yes On-line Internet

* Disclosure statement made by boards saying it hasn't happened but say it could happen.

N/A = not available

Massachusetts	California	Texas	Maryland	Alabama	Alabama-Osteopathy
On-line	On-line	On-line Real-time Historical data	On-line	On-line	On-line (1993)
Daily	Daily	Daily	Daily	Daily	As needed
Occasionally QA audits	No	No	No	No	No
No *	No	No *	N/A	No	No
Yes On-line 9/96 Bulletin Board WEB	Yes On-line	Yes On-line Internet Post to WEB	Yes Bulletin Board	No	No

* Disclosure statement made by boards saying it hasn't happened but say it could happen.

TABLE 2-5

RELATIONSHIP WITH OTHER PROFESSIONAL BOARDS WITHIN THE STATE: MEDICAL BOARDS

	Utah	Wisconsin	Florida	Washington
1. Do you have working relationship with other professional boards?	Yes Dept. of Commerce is Parent Agency for all State Professional Boards (14)	N/A	Yes Agency for Health Care Governor mandate all agencies under one umbrella	Yes
2. Do you adopt common policies?	Yes All 14 boards are on same license number system/format	N/A	No	Yes Numbering system Numbering format
3. Do you exchange information with other professional boards?	Yes	N/A	Not on procedures Provide information on MD/DO license	Yes

N/A = not available

TABLE 2-6

FUTURE PLANS FOR TECHNOLOGY ADVANCEMENT: MEDICAL BOARDS

	Utah	Wisconsin	Florida	Washington
1. Do you have any plans for technological advancement?	Yes Trying to streamline automated licensing system	N/A	No	Not presently

N/A = not available

Massachusetts	California	Texas	Maryland	Alabama	Alabama-Osteopathy
No	Yes Allied Health Professions Parent agency over all state boards	Yes Health Licensing Board of Texas	Yes	Yes Nursing Board	Yes
No Try to keep separate	No	Yes Uniform Board Member Training Program	No	No	No
Not on policy Info. on license status	Not on policy Info. on MD/DO license status	Yes	System ideas License info on MD	Not on policies Provide info. on MD's/MO's status	Yes License info. only

Massachusetts	California	Texas	Maryland	Alabama	Alabama-Osteopathy
Yes WEB; Sept, 1996	Yes Parent Agency working on enhanced system	Yes DOS based, trying to get graphic user interface Post to WEB Page, general information	Yes Working on new system. PIRRS – Physician Information Request Reporting System	Not currently	No

TABLE 2-7

ASSIGNING STATE LICENSE NUMBERS LIMITED LICENSE PRACTITIONER AND NON-PHYSICIAN PROVIDER BOARDS

	Alabama-Dental	Alabama-Physical Therapy	Florida-Podiatry
1. Do you perform primary source verification?	Yes	Yes	Yes
2. What documentation do you require prior to issuing a license?	• School transcript • Dental school boards • NDPB • Query Am. Assoc. DHL • Clearing house • State-National boards	• School transcript • National scores • Letters of reference	• School transcript • 1 yr. residence • National scores
3. Do you verify whether the applicant has/had an out of-state license(s)?	Yes	Yes	Yes
4. Do you ever assign a temporary license number?	No	Yes (90 days)	No
5. How long is a license valid?	1 year	1 year	2 years
6. How do you identify expired licenses up for renewal?	Manually (Aug. 15th; 4-part renewal notice)	In process of changing manual to computer	Computer
7. Do you validate continuing education?	Yes Random audit	Yes Documents required	Yes Random audit
8. Is a suspended, inactive, or revoked license number ever reissued?	Yes	Yes	Yes
9. Is the license reissued with the original number?	Yes	Yes, but >5 years new number	Yes, but >4 years new number
10. How long do license numbers remain in your database?	Delete if inactive	Indefinitely Delete (death)	Indefinitely
11. Are license numbers ever deleted from your database?	Yes Data printout filed-purged	Yes (death)	No
12. Could the same professional have different license numbers in your database?	No	Yes	Yes
13. Do you have problems in distinguishing between 2 individuals w/similar names and characteristics?	No Name, DOB, SS#	No Middle name, DOB, SS#	No

Florida-Chiropractic	Florida-Optometry	Texas-Clinical Psychology	Texas-SCW[1]	Texas-CRNA[2]
Yes	Yes	Yes	Yes	Yes
• School transcript • 300 hrs. w/ board cert. dr. • National scores	• School transcript • National scores • Post graduate • Equip. cert.	• School transcript • Post Doct. cert. • Letters of reference	• School transcript • Letters of reference	• School transcript • RN exam-acc. program • Exam scores
Yes	Yes	Yes	Yes	Yes
No	No	Yes (90 days)	Yes (6 months)	Yes (3 months)
2 years	2 years	1 year	1 year	2 years
Computer	Computer	Computer	Computer	Computer
Yes Random audit	Yes Random audit	Yes Random audit	Yes Random audit	Yes Random audit
Yes	Yes	Yes	Yes	Yes
Yes, but >4 years new number	Yes, but >4 years new number	Yes, but >2 years new number	Yes	Yes
Indefinitely	Indefinitely	Indefinitely	Indefinitely	Indefinitely
No	No	No	No	No
Yes	Yes	Yes	Yes	Yes
No	No	No	No	Yes

[1] CSW = Clinical Social Worker
[2] CRNA = Clinical Registered Nurse Anesthetists

TABLE 2-8

STATE LICENSE NUMBER FORMAT LIMITED LICENSE PRACTITIONER AND NON-PHYSICIAN PROVIDER BOARDS

	Alabama-Dental	Alabama-Physical Therapy	Florida-Podiatry
1. License Format:			
Character length	4 digits	4 digits [3]	9 digits
Numeric only	X	X	
Letters only			
Numeric/Letters			X
Example			P01234567
2. Is there intelligence in license numbers?	No	No	Yes First 2 letters = type of provider
3. Are the numbers manually or system assigned?	Manual	Manual	System (1993)
4. Are they assigned sequentially?	Yes	Yes Preprinted license	Yes
5. How do you ensure the license number is unique to only the individual?	Name, school, DOB, SS#		N/A
6. Do you verify data entered for accuracy, missing information, logical values?	Yes Manually	Yes Manually	Yes Logical edits
7. Have changes occurred in the license format?			
Within 5 years	No	No	No
Over 5 years	No	No	No
1930-1950	No	No	No
7a If changes, did you update old records with new number?	N/A	N/A	N/A

[3] Physical Therapy Assistants have 3 digits

N/A = not available

Florida-Chiropractic	Florida-Optometry	Texas-Clinical Psychology	Texas-SCW[1]	Texas-CRNA[2]
9 digits	9 digits	4 digits	8 digits	6 digits
X	X	X	X	X
CH1234567	OP1234567	1011, 2011	S0000001	
No	No	Yes 1 = Masters, 2 = Ph.D.	No	No
System (1993)	System (1993)	System (1989)	System (1981)	System (1985)
Yes	Yes	Yes	Yes	Yes
N/A	N/A	Computer assigned	Social Security number	N/A
Yes Logical edits	Yes Logical edits	Yes	No	Yes
No No No	No No No	No No No	Yes Yes Yes	No No Yes
N/A	N/A	N/A	Not sure	4 digits up to 1940; no changes since 1940

[1] CSW = Clinical Social Worker
[2] CRNA = Clinical Registered Nurse Anesthetists

TABLE 2-9

INTERFACE BETWEEN STATE BOARD AND MEDICARE CARRIERS/OTHERS: LIMITED LICENSE PRACTITIONER AND NON-PHYSICIAN PROVIDER BOARD

	Alabama-Dental	Alabama-Physical Therapy	Florida-Podiatry
1 Is licensee information automatically sent to Medicare carrier?	No	No	No
2. How are changes communicated to the carriers?	Not done	Not done	Not done
3. How does the carrier query the license board?	Telephone Letter Provider directory	Telephone Letter/form	Telephone Letter On-line
4. Can you provide hard copy listings? What data is included?	No	No	Yes Per customer request
5 Can you provide electronic listings? What data is included?	No	No	N/A
5a. Other types of data form	None	None	None
6. Do you have suggestions for areas of improvement	N/A	No	No
7. What other organizations do you interact with?	Hospitals Insurance companies	Exam services	Hospitals Insurance companies Out-of-state boards

Florida-Chiropractic	Florida-Optometry	Texas-Clinical Psychology	Texas-SCW[1]	Texas-CRNA[2]
No	No	No	No	No
Not done	Not done	Not done	Not done	Not done
Telephone Letter On-line	Telephone Letter On-line	Telephone (limited) Form request (limited) On-line	Telephone Letter	Telephone Letter On-line
Yes Per customer request	Yes Per customer request	No	No	Yes Per customer request
N/A	N/A	No	No	Yes Per customer request
None	None	None	None	Tape, disk, labels
No	No	No	No	No
Hospitals Insurance companies Out-of-state boards	Hospitals Insurance companies Out-of-state boards	Psych. Prof. Assoc.	Hospitals Insurance companies HMOs Out-of-state boards	Hospitals Insurance companies Out-of-state boards

[1] CSW = Clinical Social Worker
[2] CRNA = Clinical Registered Nurse Anesthetists

TABLE 2-10

LICENSE FILE MAINTENANCE: MEDICAL BOARDS: LIMITED LICENSE PRACTITIONER AND NON-PHYSICIAN PROVIDER BOARDS

	Alabama-Dental	Alabama-Physical Therapy	Florida-Podiatry
1. In what format is your license information maintained?	On-line	On-line	On-line
2. How often are your files updated?	As needed	As needed	As needed
3. Are there instances when a professional with a valid license is not on your files?	No	No	No
4. Are there instances when a practitioner with an inactive license will appear as active?	No	No	No
5. Do you allow public access to your database?	No	No	Yes

Florida-Chiropractic	Florida-Optometry	Texas-Clinical Psychology	Texas-SCW[1]	Texas-CRNA[2]
On-line	On-line	On-line	On-line	On-line
As needed	As needed	As needed	Name & address changes as needed; all others annually	As needed
No	No	No	No	No
No	No	Yes Clerical oversight	No	No
Yes	Yes	No	No	Yes

[1] CSW = Clinical Social Worker
[2] CRNA = Clinical Registered Nurse Anesthetists

TABLE 2-11

RELATIONSHIP WITH OTHER PROFESSIONAL BOARDS WITHIN THE STATE: LIMITED LICENSE PRACTITIONER AND NON-PHYSICIAN PROVIDER BOARD

	Alabama--Dental	Alabama--Physical Therapy	Florida-Podiatry
1. Do you have working relationship with other professional boards?	Yes	Yes	Yes
2. Do you adopt common policies?	No	No	No
3. Do you exchange information with other professional boards?	Yes License info. only	Yes License info. only	Yes License info. only

TABLE 2-12

FUTURE PLANS FOR TECHNOLOGY ADVANCEMENT: LIMITED LICENSE PRACTITIONER AND NON-PHYSICIAN PROVIDER BOARDS

	Alabama-Dental	Alabama-Physical Therapy	Florida-Podiatry
1. Do you have any plans for technological advancement?	No Infrequent public queries	No	Yes Looking into IBM system

Florida-Chiropractic	Florida-Optometry	Texas-Clinical Psychology	Texas-SCW[1]	Texas-CRNA[2]
Yes	Yes	No	No	Yes
No	No	No	No	No
Yes License info. only	Yes License info. only	Yes License info. only	Yes License info. only	Yes License info. only

[1] CSW = Clinical Social Worker
[2] CRNA = Clinical Registered Nurse Anesthetists

Florida-Chiropractic	Florida-Optometry	Texas-Clinical Psychology	Texas-SCW[1]	Texas-CRNA[2]
Yes IBM system	Yes IBM system	Yes New "rules driven program" IBM	Yes Internet plans	No

[1] CSW = Clinical Social Worker
[2] CRNA = Clinical Registered Nurse Anesthetists

3.0 PHYSICIAN REGISTRY DATA INTEGRITY AND DISCREPANCIES BETWEEN REGISTRY AND NCH CLAIMS DATA

The ability of the Physician Registry to support analyses and investigations of physician behavior depends on the integrity of the Registry data elements. The presence of flawed data (both erroneous data and data of dubious quality) on the Registry was found in previous studies. Data elements (e.g., specialty) maintained in the Registry are supplied by 59 carriers.[1] Site visits and interviews with carriers have provided information on how flawed data can find its way into carrier provider files and, hence, Registry files. One purpose of this chapter, then, is to document the integrity of selected Registry data elements that have not been previously analyzed. In contrast to previous studies, this study heavily relies upon direct communication with carriers and with state licensing boards for some of the analyses. These analyses utilize quarterly Registry files that HCFA receives from the Registry contractor, Transamerica Occidental Life Insurance Company (TOLIC).

Physician-specific data elements (e.g., specialty) present on NCH claims data are supplied directly from carrier provider files. Discrepancies between a quarterly Registry file and NCH claims data from the same year for common data elements, such as specialty, can arise because changes made to the Registry may be before or after the submission of a specific claim. Another purpose, then, of this chapter is to document discrepancies between the Registry and the NCH claims data for selected data elements.

To the extent possible, the reasons for the presence of erroneous (infeasible) data on the Registry are discussed. Implications for operations and policy and behavioral research are also discussed when possible.

3.1 Integrity of Selected Registry Data Elements

The integrity of the following four Registry data elements is analyzed in this section: state license numbers, carrier-issued provider identification numbers (PINs), the zip code, and the group practice indicator. None of these data elements was analyzed in our previous study

[1]The term *carriers* is used in the generic sense. Thus, for example, Aetna's operations in Georgia and New Mexico are considered as two carriers rather than one carrier with two contracts.

of the integrity of Registry data[2] and, thus, these new analyses represent an extension of that work. Both the state license numbers and the PINs were analyzed as part of a "preliminary" analysis presented in the *Interim Report* of the current study.[3] Information obtained through interviews with carriers[4] and state license boards[5] were used to augment and refine the preliminary analyses.

3.1.1 State License Numbers

As noted in the previous chapter, there are limitations to the use of state license numbers as unique physician identifiers. Nonetheless, the presence of accurate license numbers on the Registry is important to help deter the issuance of multiple UPINs to individual physicians. Further, if the state license numbers in the Registry are reliable, then linkage of Medicare UPIN and claims data to other data bases, such as the National Practitioner Data Bank, might be feasible. To assess the integrity of the license number on the Registry, four separate analyses were performed. The first three analyses were performed using the April 1994 Registry while the fourth used the July 1996 Registry.

3.1.1.1 Number of UPINs per State License Number

In a previous study of UPINs, it was estimated that up to 11,000 physicians had more than one UPIN.[6] Several computer algorithms based on the date of birth and the first three letters of the last name of physicians were used as screening elements to identify potential cases of multiple UPINs per physician. Since license numbers were not required data elements for the Registry prior to January 1992, it is possible that some physicians were erroneously issued more than one UPIN because a reliable identifier of individual physicians was not

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[2]Health Economics Research, Inc. *Unique Physician Identification Number (UPIN) Validation Studies, Carrier Analysis.* Prepared under HCFA Master Contract No. 500-92-0020. August 1994.

[3]Health Economics Research, Inc. *Understanding Properties of the UPIN for Claims-Based Research, Final Interim Report.* Prepared under HCFA Master Contract No. 500-92-0020. October 1996.

[4]Ibid., Chapter 4.

[5]Chapter 2 of this report.

[6]Op. Cit. *Carrier Analysis,* Chapter 8.

available to TOLIC. If state license numbers as recorded on the Registry are now reliable, then an algorithm including license numbers could be used to detect the issuance of more than one UPIN per physician.

To determine the maximum number of cases of multiple UPINs per physician, the number of UPINs per state license number was tabulated by state. As was done in the *Interim Report*, practice settings containing bogus license numbers (reproduced here as Table 3-1)[7] or license numbers containing all blanks, all zeroes, or all nines were excluded from the tabulations.[8] Since the interviews with the state license boards revealed that the some states had parallel numbering systems for each type of physician or provider,[9] physician credentials (e.g., MD, DO, or DDM) were controlled for when tabulating the number of UPINs per state license number.

Tabulations of the number of UPINs per state license number, by state, are shown in Table 3-2.[10] For Alabama, for example, there are 10,000 state license numbers that were associated with just one UPIN and there were ten state license numbers that were each associated with two UPINs. Minnesota had the largest percentage of cases of multiple UPINs per license number with 4.4 percent.

Controlling for physician credentials reduces the number of cases with multiple UPINs per state license number. In Alabama, for example, the number of state licenses that were each associated with two UPINs fell from 16 in Appendix Table B-1 to ten (10) in Table 3-2. More dramatic reductions in the number of cases of multiple UPINs per state license number can be found in other states. In Florida, for example, the number of state license numbers that were each associated with more than one UPIN fell from 4,484 to 511 when the control for physician credentials was included in performing the tabulations.

Even after controlling for physician credentials, there is still a non-trivial number of cases in which there is more than one UPIN associated with a given state license number. These cases are indicative of possible problems in Registry data. Of these, the issuance of

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[7]In addition to the bogus license numbers listed in Table 3-1, the character string "00000000TEMP" was found in Texas. This license number is issued temporarily by the state of Texas and is usually quickly replaced by a normal license number.

[8]See Chapter 3, Section 5 of the *Interim Report* for details of the analysis.

[9]A consequence of parallel numbering systems is that a given state license number could be associated with two separate physicians (providers). In Alabama, for instance, the license numbers for both dentists and physical therapists are four digits in length.

[10]A tabulation not controlling for physician credentials from the *Interim Report* is reproduced as Appendix Table B-1.

TABLE 3-1

BOGUS STATE LICENSE NUMBERS FOUND IN THE 1994 PHYSICIAN REGISTRY

Pattern	State
111111111111	Arizona, Nevada
000000000999	Georgia
000000009999	Georgia
000111111111	Kentucky
0000000000VP	North Carolina
00000MD00000	Tennessee
000000PERMIT	Texas
00000000000*	Texas
001000000000	Utah
000000000009	West Virginia

SOURCE: Health Economics Research, Inc. examination of April 1994 Physician Registry data file.

NOTE: The asterisk at the end of the second pattern for Texas is part of the pattern.

TABLE 3-2

NUMBER OF UPINS PER UNIQUE STATE LICENSE NUMBER, BY STATE

State	Number of UPINs Per State License Number	Number of Unique License Numbers
Alabama	1	10,000
	2	10
Alaska	1	1,108
	2	6
Arizona	1	7,776
	2	85
	3	2
	4	1
Arkansas	1	3,731
	2	36
California	1	102,221
	2	261
	3	3
	4	1
Colorado	1	9,497
	2	77
	3	1
Connecticut	1	6,471
	2	65
	3	1
Delaware	1	1,674
	2	4
District of Columbia	1	3,370
	2	28
Florida	1	40,045
	2	492
	3	9
	4	6
	5	1
	6	2
	8	1
Maine	1	2,442
	2	12
	3	1
Maryland	1	12,736
	2	75
	3	1
Georgia	1	11,415
	2	194
	3	7
	5	1
Hawaii	1	3,004
	2	22
Idaho	1	2,135
	2	9
Illinois	1	35,756
	2	444
	3	8
	4	1
	5	1
	8	1
Indiana	1	17,182
	2	140
	3	2
	4	1
	14	1
Iowa	1	7,790
	2	58
	3	3
Kansas	1	5,506
	2	42
Kentucky	1	8,563
	2	184
	3	4
Louisiana	1	9,711
	2	184
	3	6
	5	1
Mississippi	1	3,930
	2	40
	3	1
Missouri	1	10,132
	2	153
	3	1
	8	1

TABLE 3-2 (continued)

NUMBER OF UPINS PER UNIQUE STATE LICENSE NUMBER, BY STATE

State	Number of UPINs Per State License Number	Number of Unique License Numbers
Massachusetts	1	16,333
	2	95
Michigan	1	27,440
	2	278
	3	7
	4	2
	5	2
	6	1
	10	1
Minnesota	1	12,984
	2	421
	3	106
	4	29
	5	20
	6	16
	7	4
	8	1
	12	2
	13	2
	29	1
	32	1
North Dakota	1	1,595
	2	24
	3	1
Ohio	1	29,281
	2	563
	3	12
Oklahoma	1	5,402
	2	74
	3	1
Oregon	1	7,380
	2	54
Pennsylvania	1	40,480
	2	79
	3	2
	4	2
Montana	1	2,219
	2	7
Nebraska	1	3,388
	2	20
Nevada	1	2,614
	2	34
New Hampshire	1	2,391
	2	8
	3	1
New Jersey	1	22,409
	2	134
New Mexico	1	3,218
	2	35
New York	1	59,926
	2	585
	3	4
North Carolina	1	14,662
	2	181
	3	6
	4	2
Texas	1	36,856
	2	172
	3	1
	5	1
Utah	1	4,161
	2	26
	3	1
Vermont	1	1,136
	2	2
Virginia	1	13,318
	2	77
	3	1
Washington	1	13,359
	2	113
	3	4
	16	1

TABLE 3-2 (continued)

NUMBER OF UPINS PER UNIQUE STATE LICENSE NUMBER, BY STATE

State	Number of UPINs Per State License Number	Number of Unique License Numbers
Rhode Island	1	3,311
	2	66
	3	3
South Carolina	1	8,424
	2	93
	3	8
South Dakota	1	1,573
	2	13
Tennessee	1	12,307
	2	186
	3	5
	4	3
West Virginia	1	4,897
	2	105
	3	1
	8	1
	10	2
	24	1
Wisconsin	1	14,231
	2	77
	3	1
Wyoming	1	1,039
	2	19

SOURCE: Health Economics Research, Inc. tabulations of April 1994 Physician Registry file.

multiple UPINs per physician is a distinct possibility. Another important possibility is that there might be transcription errors in the state license number field. The transposition of two characters in the license number field for one physician's practice setting could result in the association of a license number with more than one UPIN. Dumps of the raw data for each of the practice settings of the associated UPINs might be necessary to distinguish between these alternative explanations.

The issuance of multiple UPINs per physician and transcription errors are unlikely to account for the cases in which there are a *large* number of UPINs per license number. For instance, in Minnesota there are 32 UPINs associated with one license number and in West Virginia, there are 24 UPINs associated with one license number. To test the possibility that the number entered into the state license number field on the Registry might be some other number such as a Group PIN or a tax identification number, cases with four or more UPINs per state license number were identified. The "license numbers" for such cases were then compared to, by state, the Group PIN and the tax identification number in the recently available "Group File" from HCFA. Matches between the Registry state license number and the Group tax identification number were found for only two of the state license numbers. The results were forwarded to HCFA for further investigation to determine whether the matches were coincidental. No matches were found for the Group PIN field.

3.1.1.2 Number of State License Numbers per UPIN

Just as there might be more than one UPIN per state license number, the converse might also occur: more than one state license number per UPIN. There are several possible sources for such occurrences. Transcription errors in the license number are one possible source, especially in the case of physicians in New York or California where there is more than one carrier per state and physicians maintain separate offices in each carrier's service area. Incorrect attachment of a practice setting record to a UPIN could also cause it.

When some states change the format of their license number, they issue new license numbers (e.g., Utah). Failure by carriers to update the license number on all of the active practice settings[11] could result in the association of more than one license number with a single

[11]Each practice setting has a DRIP (Deactivate, Resident, Intern, in Practice) indicator. A DRIP value of R, I, or P represents a *active* practice setting.

physician (UPIN). A similar problem occurs when a physician does not renew his/her license on time and the state issues a new number.[12]

Controlling for physician credentials and the state in which the physician is licensed (state licensed in), the number of state licenses per physician (UPIN) were tabulated by state (Table 3-3).[13] While most physicians had only one license number associated with their UPIN, every state had at least one case in which there was more than one license number associated with a given UPIN. In Alabama, for example, there are 9,843 UPINs that were associated with just one state license number, there were 87 UPINs that were each associated with two state license numbers, and one UPIN that was associated with three license numbers. Illinois and Indiana had the largest percentages of cases of multiple license numbers per physician (UPIN) with nearly 23 percent of their physicians having more than one license number in the Registry for each of their UPINs.

3.1.1.3 UPINs Embedded in Registry State License Numbers

As a consequence of a site visit to the Railroad Retirement Board (RRB) processing center in Georgia in 1993,[14] a check for the presence of UPINs embedded in state license numbers was performed. During the site visit, RRB personnel indicated that while they awaited a new physician's completed application package, that they would insert, as a temporary measure, the physician's UPIN (if available) into the state license number field and transmit it to the Registry.

To determine the extent of this possible problem, the UPIN for each practice setting was compared to the state license number on the same practice setting. Since the state license number field is 12 bytes in length, the UPIN was compared to sub-strings of the state license number of 6 contiguous bytes. There are seven such possible sub-strings starting with bytes 1 through 6, bytes 2 through 7, and so forth up to bytes 7 through 12.

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[12]Four of the boards interviewed for Chapter 2 of this report indicated that they issue new license numbers in such circumstances.

[13]Neither bogus license numbers nor Registry license numbers that were filled with all blanks, all zeroes, or all nines were considered in the tabulations.

[14]Health Economics Research, Inc. *Unique Physician Identification Number (UPIN) Validation Studies, Final Report.* Prepared under HCFA Master Contract No. 500-92-0020. February 1995.

TABLE 3-3

NUMBER OF STATE LICENSES PER DISTINCT UPIN, BY STATE

State	Number of State Licenses per UPIN	Number of Distinct UPINs
Alabama	1	9,843
	2	87
	3	1
Alaska	1	947
	2	82
	3	3
Arizona	1	7,473
	2	237
	3	3
Arkansas	1	3,651
	2	76
California	1	73,986
	2	13,581
	3	511
	4	16
	5	1
	6	1
Colorado	1	9,255
	2	198
	3	1
Connecticut	1	6,276
	2	161
	3	2
Delaware	1	1,600
	2	41
District of Columbia	1	3,316
	2	55
	3	
Florida	1	39,788
	2	642
	3	11
Maine	1	2,399
	2	35
Maryland	1	12,241
	2	315
	3	6
Georgia	1	10,865
	2	458
	3	13
	4	2
Hawaii	1	2,951
	2	47
	3	1
Idaho	1	2,011
	2	71
Illinois	1	22,694
	2	5,769
	3	701
	4	78
	5	5
	6	1
	7	1
Indiana	1	10,914
	2	3,065
	3	142
	4	4
Iowa	1	7,555
	2	169
	3	6
	4	1
Kansas	1	5,297
	2	139
	3	5
Kentucky	1	8,230
	2	330
	3	16
	5	1
Louisiana	1	9,723
	2	188
	3	1
Mississippi	1	3,766
	2	119
	3	3
Missouri	1	8,997
	2	648
	3	48
	4	3

TABLE 3-3 (continued)

NUMBER OF STATE LICENSES PER DISTINCT UPIN, BY STATE

State	Number of State Licenses per UPIN	Number of Distinct UPINs
Massachusetts	1	16,359
	2	82
Michigan	1	23,993
	2	1,888
	3	91
	4	3
Minnesota	1	10,620
	2	1,714
	3	164
	4	12
	5	3
North Dakota	1	1,563
	2	41
	3	1
Ohio	1	29,221
	2	596
	3	10
Oklahoma	1	5,412
	2	69
	3	1
Oregon	1	6,415
	2	497
	3	25
	4	1
Pennsylvania	1	37607
	2	1,474
	3	31
	4	1
Montana	1	1,911
	2	152
	3	6
Nebraska	1	3,381
	2	22
	3	1
Nevada	1	2,468
	2	101
	3	4
New Hampshire	1	2,364
	2	23
New Jersey	1	20,609
	2	991
	3	26
	4	2
New Mexico	1	3,063
	2	108
	3	3
New York	1	58,904
	2	1,084
	3	12
North Carolina	1	12,032
	2	1,317
	3	120
	4	6
Texas	1	36387
	2	406
	3	3
Utah	1	3,170
	2	446
	3	42
	4	7
Vermont	1	1,121
	2	8
	3	1
Virginia	1	12,477
	2	493
	3	4
Washington	1	13,232
	2	186
	3	3

TABLE 3-3 (continued)

NUMBER OF STATE LICENSES PER DISTINCT UPIN, BY STATE

State	Number of State Licenses per UPIN	Number of Distinct UPINs
Rhode Island	1	3,265
	2	89
	3	3
South Carolina	1	7,948
	2	321
	3	12
	4	2
South Dakota	1	1,543
	2	28
Tennessee	1	10,309
	2	1,089
	3	65
	4	6
West Virginia	1	4,569
	2	274
	3	15
Wisconsin	1	14,112
	2	138
Wyoming	1	1,006
	2	34
	3	1

NOTE Bogus license numbers and blank-filled license numbers were dropped from the data before tabulation.

SOURCE: Health Economics Research, Inc. tabulations of April 1994 Physician Registry file.

Of the approximately 1.8 million active practice settings, only 268 were found to have the UPIN embedded in the state license number. Of the 268 cases, 205 were associated with the two RRB carriers which, between them, had about 372,000 active practice settings. Another 38 cases were associated with TOLIC, the carrier for southern California. No other carrier had more than six cases of an UPIN embedded in the state license number.

In the case of TOLIC, the 38 cases might be coincidental since the format for the California state license number and the UPIN are the same: a letter followed by five digits. Many, if not most, of the other 230 cases might (also) be coincidental.

3.1.1.4 Conformance of Registry State License Numbers with the Formats Specified by State Licensing Boards

Utilizing information provided in Chapter 2, the format of Registry state license numbers are compared to the format specified by selected state license boards. License format information in Table 2-2 was used as the basis for checking the Registry license formats for medical doctors in Utah, Florida, Washington, Massachusetts, California, Texas, Maryland, and Alabama. License format information in Table 2-8 was used as the basis checking the Registry license formats for dentists and physical therapists in Alabama; podiatrists, chiropractors, and optometrists in Florida; and clinical psychologists, clinical social workers, and clinical (certified) registered nurse anesthetists in Texas. Because some of the specifications were ambiguous or changed over time, the analysis also relied on data dumps of license numbers as they appear in the Registry. Since non-physicians were not present in the April 1994 Registry file, a more recent Registry file was used. The July 1996 Registry file was selected for the analysis because it was the most recent Registry file available for the analysis and to allow for enough time for the change in the format of medical doctor license numbers in Massachusetts to be reflected in the Registry.

Active practice settings for the specified credentials and states were used in the analysis. The Registry state license number was right-justified prior to the analysis. This was the only preliminary "preparation" performed on Registry license numbers because corrections

to previously-erroneous Registry data should have been reflected in the July 1996 Registry.[15] Thus, unlike the previous three analyses, bogus license numbers were not dropped.

The analysis was performed by breaking the Registry state license number into two parts: (1) the first or left-most bytes in the license number field and (2) the last or right-most bytes in the license number field. The dividing point between the two parts depended on the credential and the state. The state license number for medical doctors in California, for instance, is six characters long while in Alabama, it is five characters long. In analyzing medical doctor license numbers in California, the 12-byte Registry field was divided into two 6-byte fields while in Alabama, the first 7 bytes were analyzed separately from the last 5 bytes. In analyzing the license numbers for dentists and physical therapists in Alabama, the Registry field was divided into the first 8 bytes and the last 4 bytes.

An example of the basic analytic results is presented for the state license numbers of medical doctors in California in Table 3-4. (Appendix B-2 contains panels (pages) for each state and credential combination.) The first or left-most 6 bytes of the California state license number for medical doctors should be all zeroes if the carrier exactly followed Registry formatting rules. To facilitate analysis, each byte in the license field was replaced by a symbol. The replacement symbols are the ampersand (&), the number nine (9), and the upper case letter 'X.' The ampersand is only used as a replacement symbol for the first or left-most bytes and replaces zeroes and blanks. The letter X denotes any letter found in a byte position. The number 9 was used in two different ways. For the first or left-most bytes, the number 9 represents any number one through nine. For the last or right-most bytes, the number represents any number, including zeroes. Hyphens and other special characters were not replaced but rather left as is.

The left-most set of columns in Table 3-4 shows the number of occurrences (frequency) for each combination of replacement symbols found in the first six bytes in the state license number. Only the set of six ampersands ('&&&&&&') is considered valid according to Registry and state licensing board formatting rules. (Although the Registry specifies that the left-most bytes be zero-filled, blank-filled and any combination of zeroes and blanks were also accepted as valid for the left-most bytes.) The right-most set of columns in Table 3-4 shows number of occurrences (frequency) for each combination of replacement symbols found in the last six

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[15]HCFA's Bureau of Program Operations (BPO) had directed the carriers to "clean-up" their data during 1995 and 1996 in preparation for the transition to a National Provider Identifier (NPI).

TABLE 3-4

ACTUAL FORMAT OF REGISTRY STATE LICENSE NUMBERS FOR MEDICAL DOCTORS IN CALIFORNIA

FIRST OR LEFT-MOST 6 BYTES			LAST OR RIGHT-MOST 6 BYTES		
Symbol[a]	Frequency	Percent	Symbol[b]	Frequency	Percent
			All Blanks	7,104	3.0 %
&&&&&&	124,540	52.2 %	X	1	0.0
&&&&&X	6,427	2.7	9	2	0.0
&&&&&9	796	0.3	XX	1	0.0
&&&&X&	84	0.0	X99	2	0.0
&&&&X-	19	0.0	999	8	0.0
&&&&XX	34	0.0	XXXX	1	0.0
&&&&X9	26	0.0	X999	72	0.0
&&&&9&	40	0.0	9999	26	0.0
&&&&9X	3	0.0	XX999	2	0.0
&&&&99	4	0.0	X9X99	3	0.0
&&&X&&	6	0.0	***X9999***	3,556	1.5
&&&X&9	3	0.0	99999	144	0.1
&&&X-9	1	0.0	-99999	50	0.0
&&&XX&	10	0.0	X-9999	4	0.0
&&&XXX	24	0.0	XXXXXX	3	0.0
&&&XX9	18	0.0	XXXX99	1	0.0
&&&X9&	2	0.0	XXX999	1	0.0
&&&X99	5	0.0	XX9999	35	0.0
&&&9&X	1	0.0	X9.999	1	0.0
&&&9&9	3	0.0	X9X999	1	0.0
&&&99&	6	0.0	X999XX	1	0.0
&&&999	21	0.0	X9999-	2	0.0
&&X&&&	3	0.0	X9999X	12	0.0
&&XX&&	2	0.0	X99999	113,421	47.6
&&XXXX	1	0.0	9 XXXX	1	0.0
&&X9&9	5	0.0	9-9999	1	0.0
&&99-&	1	0.0	9XX999	2	0.0
&X&&&&	40	0.0	***9X9999***	817	0.3
&99999	1	0.0	99X999	16	0.0
X&&&&&	106,186	44.5	9999-X	1	0.0
X&&&&X	1	0.0	9999-9	1	0.0
X&&&&9	5	0.0	9999XX	2	0.0
XX&&&&	1	0.0	99999X	105	0.0
XX&999	8	0.0	***999999***	112,986	47.4
XXXXXX	40	0.0			
XXX999	1	0.0			
X9&&&&	3	0.0			
X99&99	1	0.0			
X999&&	1	0.0			
X9999&	1	0.0			
X99999	2	0.0			
999&9&	10	0.0			
TOTAL	238,386			238,386	

NOTES: A box around a symbol denotes a correct format.

[a] &: 0,BLANK; 9: DIGIT 1 through 9; X: any LETTER

[b] 9:any DIGIT; X: any LETTER

SOURCE: July 1996 Physician Registry.

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bytes in the state license number. Only the 'X99999' combination conforms exactly to the California state licensing board format. Those symbol combinations that conform exactly to the licensing board specification are highlighted by being placed inside a box.

Symbol combinations that might possibly be edited into a format that conforms to the state licensing board specifications are highlighted in bold italics in Table 3-4 and in Appendix Table B-2. The results for California are especially instructive since only 113,421 (47.6 percent) of the active practice settings have state license numbers that conform exactly to the licensing board's specification. The reason for such a low rate is because one of the carriers for California (California Blue Shield) usually placed six zeroes *between* the lead letter of the license number and the rest of the license number. This accounts, then, for the 106,186 occurrences of the combination of 'X&&&&&' in the left-most six bytes and, presumably, the 112,986 occurrences of the combination of '999999' in the right-most six bytes. Since the number of occurrences of such combinations is so high, it appears that this was the result of a deliberate decision by California Blue Shield rather than random errors.

A summary of the analytical results for the conformance of Registry licenses for medical doctors with the state licensing boards' formats is presented in Table 3-5. For each state, the licensing board's license number format (specification), the total number of active practice settings, and the number of license numbers that *exactly* conform to its licensing board's specifications are listed. Only the last or right-most bytes of the Registry license number field were considered in making the determination of whether the Registry license number conformed to the board specification (see page 3-14). The proportion of license numbers that conform to the board's specifications ranges from 47.6 percent in California to 98.2 percent in Utah.

The above results should be cautiously interpreted. For instance, as already noted for California, it appears that California Blue Shield has the correct license number in the Registry, if the number is partitioned and concatenated differently. On its face, however, the Registry format does not conform to the board's format. For Maryland, the board indicated during the interview that its license number was 8 bytes in length. Visual inspection of the Registry license numbers revealed that most numbers were only 6 bytes long. For Washington, virtually no license in the Registry had the format indicated in Table 2-2, but rather, appeared to be only 5 bytes long. The Utah state license number consists of twelve numerals of which the first two are the year in which the licensed was issued followed by a unique six digit

TABLE 3-5

CONFORMANCE OF REGISTRY STATE LICENSE NUMBERS TO LICENSING BOARD SPECIFICATIONS, MEDICAL DOCTORS

State	Licensing Board Specification*	Total Active Practice Settings	LICENSE NUMBERS THAT EXACTLY CONFORM	
			Number	Percent
Alabama	all digits, up to 5	21,769	21,318	97.9 %
California	X99999[a]	238,386	113,421	47.6
Florida	XX9999999[a]	83,925	41,979	50.0
Maryland	X99999[a] (see text)	34,847	27,869	80.0
Massachusetts	all digits, up to 6	56,778	52,414	92.3
Texas	X99999[a]	86,235	77,069	89.4
Utah	12 numbers (see text)	7,693	7,553 [b]	98.2
Washington	XX00099999[a] or 99999 (see text)	24,870	24,349	97.9

NOTES:
*Only the last or right-most bytes from the 12-byte Registry field were used.

[a] X indicates a letter, 9 indicates any number zero through nine, and 0 indicates a zero.
[b] result might not be meaningful, see text.

SOURCE: Health Economics Research, Inc. tabulations of July 1996 Registry.

identification number and by a number that is the same for all MDs (Table 2-2). The license number format was changed in 1991 (Table 2-2). The results listed in Table 3-5 for Utah, thus might very well be meaningless since the Registry licenses appeared to have no consistent pattern other than usually just consisting of numbers.

A similar summary of the analytical results for the conformance of Registry licenses for osteopaths and limited license practitioners with the state licensing boards' formats is presented in Table 3-6. The proportion of license numbers that conform to the board's specifications ranges from 33.4 percent for optometrists in Florida to 100 percent for clinical (certified) registered nurse anesthetists in Texas. Note that in the July 1996 Registry file, there were no providers in Texas with the RNA credential that is used to denote certified registered nurse anesthetists. Providers with the CNA credential (certified nurse anesthetists) were selected for analysis. As with the case for medical doctors, the results presented in Table 3-6 should be interpreted cautiously.

As noted above, only the right-most bytes of the Registry license number were considered in tabulating the number of license numbers that conformed to the licensing board specifications. As is apparent from Tables 3-4 and B-2, the left-most bytes in the Registry license number are not always equal to zeroes or blanks. It is possible, thus, that the tabulated number of license numbers that conformed presented in Tables 3-5 and 3-6 are too high. Further, since the licensing number specifications are only available for a few states, researchers will not know which bytes in the Registry license field to disregard for most states.

3.1.2 Conformance of the Format of Registry PINs with Carriers' Own Specifications

The carrier interviews[16] revealed that physician-specific information (e.g., Medicare participation status) on NCH claims is directly obtained from carriers' provider files, rather than from separately-maintained crosswalk files. The provider files are also the source of physician information on the Registry. Given the common source of information there should be, in principle, no discrepancies in such information between the claims data and the Registry. Changes in physician status (e.g., specialty or Medicare participation status) lead to changes in both the claims data and the Registry. Analysts usually only have Registry files from one point

[16]Op. Cit., *Carrier Analysis*, Chapter 4.

TABLE 3-6

CONFORMANCE OF REGISTRY STATE LICENSE NUMBERS TO LICENSING BOARD SPECIFICATIONS, OSTEOPATHS AND SELECTED LIMITED LICENSE PRACTITIONERS

State	Credential	Licensing Board Specification*	Total Active Practice Settings	LICENSE NUMBERS THAT EXACTLY CONFORM	
				Number	Percent
Alabama	Osteopaths	DO999[a]	538	502	93.3 %
Alabama	Dentists	9999[a]	350	349	99.7
Alabama	Physical Therapy	9999[a]	73	71	97.3
Florida	Podiatry	XX9999999[a]	2,239	1,125	50.2
Florida	Chiropractic	XX9999999[a]	3,826	2,100	54.9
Florida	Optometry	XX9999999[a]	2,896	966	33.4
Texas	Clinical Psychology	9999[a]	1,963	1,962	99.9
Texas	Clinical Social Worker	X9999999[a]	1,786	1,780 [b]	99.7
Texas	Clinical Registered Nurse Anesthetists[c]	999999[a]	2,608	2,608	100.0

NOTES:
*Only the last or right-most bytes from the 12-byte Registry field were used.

[a] X indicates a letter, 9 indicates any number zero through nine, and 0 indicates a zero.
[b] result might not be meaningful, see text.
[c] There were no providers in Texas with the RNA credential, thus providers with the CNA credential were selected for analysis.

SOURCE: Health Economics Research, Inc. tabulations of July 1996 Registry.

in time whereas claims data usually cover an entire period (e.g., year). Thus, as a practical matter, comparisons of claims and Registry data may lead to discrepancies. (See Chapter 4 for further information on this issue.)

Analysts can be more confident about the data quality in both data sets if it can be determined that the quality of other common data elements is high. One such data element is the carrier-issued PIN. The results of preliminary analyses presented in Chapter 3 of the *Interim Report* showed that PINs found in claims data could not always be found in the Registry. In itself, such a finding is not conclusive evidence of inherently poor data quality since there may be unknown but valid reasons why a claims PIN might not be found in the Registry. Possibilities include a complete replacement of PINs when carrier contracts change and the use of "internal" PINs to link individual to physician-specific group PINs.[17] In this section, the first two of several examinations of carrier-issued PINs are presented.

Since the establishment of a practice setting on the Registry should be associated with a carrier-issued PIN, the first test is simply to check for the presence of a PIN in each Registry practice setting. A PIN field was considered empty (not having a PIN) if it contained all blanks, all zeroes, all nines, or any combination of the three characters. Of approximately 1.8 million active Registry practice settings, only 96 did not have a PIN present (Table 3-7). Since some PINs might consist of only zeroes and nines, the 96 might be an over-estimate of the number of Registry practice settings without PINs.

The second test involves the conformance of the format of Registry PINs to the carriers' own specifications. Carrier PIN formats were obtained during the carrier interviews (see Chapter 4 of the *Interim Report*). For the seven interviewed carriers, Table 3-8 shows the carrier's PIN specification (format) by practice type. (The presentation of these formats is similar to those used in the analysis of state license number earlier in this chapter.) Of the 13 possible formats, only the Registry PINs for Alabama group practices exactly conformed to the specifications supplied during the interviews for each and every PIN. The Registry PINs for Pennsylvania BS and MetraHealth (Mississippi) had a conformance rate of nearly 100 percent with the carriers' specifications.

It is not clear whether the results for solo practices in Alabama are meaningful. According to the interview with Alabama BC/BS, the 4 left-most bytes in its 9-byte PIN should

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[17]See the discussion on the use of internal PINs by California Blue Shield in Chapter 4 of the *Interim Report*.

TABLE 3-7

PRESENCE OF CARRIER-ISSUED PINs IN REGISTRY PRACTICE SETTINGS

CARRIER		ACTIVE PRACTICE SETTINGS	
Number	Name	Total	Without a PIN
00510	Alabama BC/BS	19,629	3
00520	Arkansas BC/BS, AR	12,942	0
00528	Arkansas BC/BS, LA	26,168	0
00542	California BS	114,758	1
00550	Colorado BC/BS	13,321	0
00570	Pennsylvania BS, DE	3,260	0
00580	Pennsylvania BS, DC	18,564	0
00590	Florida BC/BS	91,534	9
00621	Illinois BC/BS	61,515	6
00630	Indiana BC/BS	28,295	0
00640	Iowa BS	12,392	0
00650	Kansas BS, KS	8,091	0
00655	Kansas BS, NE	6,531	6
00660	Kentucky BC/BS	20,566	1
00690	Maryland Blue Shield	18,300	3
00700	C&S Administrative Services, MA	58,832	0
00710	Michigan BC/BS	57,217	0
00720	Minnesota BC/BS	13,057	0
00740	Kansas BS, MO	9,774	3
00751	Montana BC/BS	2,927	2
00780	C&S Administrative Services, NH	6,713	1
00781	C&S Administrative Services, VT	4,316	0
00801	Blue Shield of Western New York	22,406	0
00803	Empire BC/BS, NY	95,595	0
00820	North Dakota BC/BS, ND-SD	4,958	2
00825	North Dakota BC/BS, WY	1,539	0
00860	Pennsylvania BS, NJ	32,287	1
00865	Pennsylvania BS, PA	75,323	5
00870	Rhode Island Blue Shield	5,448	0
00880	South Carolina BC/BS	15,996	0
00900	Texas BC/BS	63,931	2
00910	Utah BC/BS	5,640	0
00951	Wisconsin Physician Service	22,487	1
00973	S.S.S., PR	11,064	4
00974	S.S.S., VI	8	0
01020	Aetna Life and Casualty, AK	1,894	1
01030	Aetna Life and Casualty, AZ	16,356	1
01040	Aetna Life and Casualty, GA	28,094	0
01120	Aetna Life and Casualty, HI	5,496	0
01290	Aetna Life and Casualty, NV	4,516	0
01360	Aetna Life and Casualty, NM	6,870	0
01370	Aetna Life and Casualty, OK	12,663	0

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TABLE 3-7 (continued)

PRESENCE OF CARRIER-ISSUED PINs IN REGISTRY PRACTICE SETTINGS

CARRIER		ACTIVE PRACTICE SETTINGS	
Number	Name	Total	Without a PIN
01380	Aetna Life and Casualty, OR	14,128	0
01390	Aetna Life and Casualty, WA	19,589	1
02050	Transamerica Occidental	108,451	0
05130	Equicor Life Assurance, ID	3,315	0
05440	Equicor Life Assurance, TN	28,761	0
05535	Prudential, NC	39,376	0
10072	Railroad Retirement Board	219,300	2
	Railroad Retirement Board	160,899	3
10230	Travelers Insurance Co., CT	15,064	0
10240	Travelers Insurance Co., MN	12,654	1
10250	Travelers Insurance Co., MS	8,330	0
10490	Travelers Insurance Co., VA	17,682	0
11260	Missouri General Am. , MO	17,893	33
14330	Group Health Insurance, NY	8,907	4
16360	Nationwide Insurance Co., OH	69,830	0
16510	Nationwide Insurance, WV	12,364	0
21200	C&S Administrative Serv.,ME	6,533	0
	TOTAL	1,804,349	96

SOURCE: April 1994 Physician Registry.

TABLE 3-8

CONFORMANCE OF REGISTRY PROVIDER IDENTIFICATION NUMBERS (PINs) TO CARRIERS' OWN FORMAT

CARRIER						PINs THAT EXACTLY CONFORM	
Number	Name	Service Area	Practice Type	Carrier Specification*	Total Active Practice Settings	Number	Percent
00510	Alabama BC/BS	Alabama	Solo	000099999	6,736	6,735 [c]	100.0 %
			Group	999999999	12,889	12,889	100.0
00520	Arkansas BC/BS	Arkansas	Solo	99999	5,290	4,954	93.6
			Group	999999999	7,650	6,334	82.8
00542	California BS	Northern California	Solo	00X999999[a]	34,246	21,756 [d]	63.5
			Group	XXX99999X	80,507	64,578	80.2
01040	Aetna	Georgia	Solo	XXXXXXX[b]	6,994	see text	
			Group	GRP9999	21,099	see text	
00700	C & S Administrative	Massachusetts	Solo	X99999	30,914	29,875	96.6
			Group	X99999X99999	27,905	27,299	97.8
10250	MetraHealth	Mississippi	Either	999999999[b]	8,330	8,313	99.8
00865	Pennsylvania BS	Pennsylvania	Solo	0999999	40,372	40,371	100.0
			Group	09999990999999	34,946	34,944	100.0

NOTES:
*Only the last or right-most bytes from the 14-byte Registry field were used. X indicates a letter, 9 indicates any number zero through nine, and 0 indicates a zero. Any other character denotes itself.

[a] The third through eighth bytes should be the provider's state license number.
[b] The first two bytes should indicate the provider's specialty.
[c] Results might not be meaningful, see text.
[d] Might be an undercount, see text for further discussion.

SOURCE: Health Economics Research, Inc. tabulations on April 1994 Registry.

be zeroes. Only one solo practice setting was found to have all zeroes in the leading 4 bytes. Thus, even though the right-most bytes for Alabama's solo PINs conformed to the carrier's specifications, the lack of conformance for the left-most bytes raises doubt about the conformance of the entire 9-byte field with the carrier's specifications.[18]

A similar problem might account for the low conformance rate of Registry PINs for both solo and group practices for California BS. For instance, for 90.5 percent of the solo PINs, the portion of the PIN that should be equal to the state license number for the physician is, in fact, equal to the license number. (Note, however, the earlier discussion on how California BS entered state license numbers into their system.) This suggests that the two leading zeroes in the solo PIN format pertain only to medical doctors and that, for each type of credential, the two leading bytes have other values.

The results for Aetna's Georgia operations are partly a consequence of the co-existence of two separate PIN formats and partly due to a lack of information on the older format. The format in Table 3-8 is Aetna's current format for solo PINs. Aetna, however, did not replace the earlier PINs issued by the previous carrier for Georgia, Prudential. HER does not have the specifications for Prudential's PINs. Only 20 percent of the first 2 bytes of solo PINs were equal to the primary specialty code maintained on the Registry. Since many of the PINs were issued by Prudential and Aetna might have its own specialty coding system, this result might not be meaningful. The prefix "GRP" was not found in any of the group PINs for Georgia.

As with the state license number analysis in Section 3.1.1.4, this analysis concentrated on the right-most bytes of the 14-byte Registry field. Also, as with the license number analysis, junk (other than zeroes or blanks) was often found in the left-most bytes. This implies that to correctly use PINs found on the Registry, it is necessary for the analyst to have information on the PIN format. In the absence of information provided directly by the carriers, the analyst should perform data dumps by type of practice and credential for each carrier to ascertain the implied format.

The lack of complete conformance of Registry PINs with the carriers' own specifications is disappointing and casts doubt upon the accuracy of other data elements common to both the claims data and the Registry. Hopefully the carriers' clean-up of Registry data, at HCFA's direction, will result in higher quality PIN data in the Registry after 1996.

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[18]These results were discussed with Alabama BC/BS. They indicated that they were aware that the PIN format for solo practices was not correct in the Registry prior to 1995. They have since re-submitted their solo PINs to the Registry with correct formats.

3.1.3 Zip Codes in the Registry

Up until 1995, the Registry only maintained the business zip code and the billing zip code from the address information sent to it by the carriers. Although tests could have been performed on the presence of a valid zip code in Registry prior to 1995, it could only be performed at the state level. By using recent Registry files, a more sophisticated analysis can be performed on the zip code.

Rather than design our own algorithm to check the consistency of Registry address information, LPC's FINALIST address checking/correction program was used.[19] Since another HCFA contractor, TriCor, was already performing a clean-up of physician addresses maintained on the Registry, they were consulted. It was determined that FINALIST's standard report would not provide exactly what was wanted - the number of zip codes that were inaccurate or otherwise inconsistent with the street address and city in which the physician's office is located.

The FINALIST output, however, can be used to determine the maximum and minimum number of records (active practice settings) with accurate zip codes in the Registry. Using Exhibit 3-1 as an example, the number of zip codes that FINALIST could successfully associate with the physician's office street address and city was 4,769, listed on Page 2 of its standard report.[20] This value is composed of accurate zip codes on the Registry and zip codes that FINALIST assigned on the basis of the street address and city. This value, then, constitutes the maximum number of active practice settings on the Registry with accurate zip codes. On Page 1 of the FINALIST report, the number of records that had any type of change made to its geographic information is indicated as 198. Some of changes to geographic information on the 198 records are for address elements other than the zip code. Subtracting 198 from 4,769, thus, gives the minimum number of active practice settings on the Registry with accurate zip codes.

Using FINALIST output generously provided by TriCor, the maximum and minimum number of accurate zip codes in the July 1996 Registry are presented for each carrier in Table 3-9.[21] The RRB (Georgia operations) and SSS, the carrier for Puerto Rico and the Virgin Islands,

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[19]FINALIST is a registered trademark of LPC, a Pitney Bowes Company.

[20]These results are for MetraHealth's Rhode Island contract.

[21]See Appendix C for alternative names for some of these carriers.

EXHIBIT 3-1

EXAMPLE OF THE FIRST TWO PAGES OF THE STANDARD FINALIST REPORT*

FINALIST SUMMARY STATISTICS PAGE 1

PROCESS DATE 8/22/96
PROCESS TIME 09:10:35
FILE VERSION 3.00 4/08/96
CITY VERSION 3.00 4/08/96

RELEASE 06.6

INPUT RECORDS ----------			5,250	100.00
RECORDS SUCCESSFULLY MATCHED -----			4,768	90.82
WITHOUT GEOGRAPHIC CHANGES ---	4,570	87.05		
WITH GEOGRAPHIC CHANGES ------	198	3.77		
RECORDS WITH INSUFFICIENT DATA ---			482	9.18

FINALIST CODING STATISTICS PAGE 2
FOR 5,250 RECORDS

PROCESS DATE 8/22/96
PROCESS TIME 09:10:35
FILE VERSION 3.00 4/08/96
CITY VERSION 3.00 4/08/96

RELEASE 06.6

MATCHED **	# OF RECORDS	% OF INPUT	INSUFFICIENT ** DATA **	# OF RECORDS	% OF INPUT
ZIP	4,769	90.84	ZIP/CITY NOT CONFIRMED	7	0.13
CARRIER	4,768	90.82			
WEIGHTED	25	0.48	STREET NOT CONFIRMED	455	8.67
ZIP+4	4,768	90.82			
WEIGHTED	25	0.48	STREET RANGE NOT CONFIRMED	20	0.38
			MATCHED TO MULTIPLE RECS	0	0.00
			OTHER	0	0.00

*For MetraHealth, the carrier for Rhode Island (Carrier No. 00870).

SOURCE: Statistical reports produced by Mike Gorham and Diane Rodriguez of TriCor using July 1996 Physician Registry.

TABLE 3-9

INTEGRITY OF BUSINESS ZIP CODES ON THE PHYSICIAN REGISTRY, JULY 1996

CARRIER			FEASIBLE ZIP CODES				INSUFFICIENT DATA	
			COUNTS		PERCENT			
Number	Name	Total Active Practice Settings	Max	Min	Max	Min	Count	Percent
00510	Blue Cross and Blue Shield of Alabama	20,359	18,337	17,537	90.07	86.14	2,139	10.51
00520	Arkansas Blue Cross and Blue Shield	15,670	12,548	9,528	80.08	60.80	3,392	21.65
00528	Arkansas Blue Cross and Blue Shield - LA	36,476	32,373	28,626	88.75	78.48	4,568	12.52
00542	BC of CA - California Physician's Service	127,113	120,708	116,990	94.96	92.04	6,890	5.42
00570	Xact Medicare Services - DE	3,751	3,230	2,922	86.11	77.90	527	14.05
00580	Xact Medicare Services - DC	21,371	19,877	19,366	93.01	90.62	1,520	7.11
00590	Blue Cross and Blue Shield of Florida	80,981	74,207	70,026	91.64	86.47	7,424	9.17
00621	Health Care Service Corporation - IL	61,980	58,394	57,462	94.21	92.71	4,407	7.11
00623	Health Care Service Corporation - MI	59,524	55,500	53,793	93.24	90.37	4,496	7.55
00630	AdminaStar Federal of Indiana	32,670	26,284	25,509	80.45	78.08	6,502	19.90
00640	IASD Health Services	14,860	13,300	12,993	89.50	87.44	1,735	11.68
00650	Blue Cross and Blue Shield of Kansas - KS	8,934	7,070	6,738	79.14	75.42	1,969	22.04
00655	Blue Cross and Blue Shield of Nebraska	6,940	5,959	5,545	85.86	79.90	993	14.31
00660	AdminaStar of Kentucky	23,749	17,039	16,464	71.75	69.33	6,744	28.40
00700	Blue Cross and Blue Shield of Massachusetts	58,114	52,905	52,003	91.04	89.48	5,369	9.24
00720[a]	Blue Cross and Blue Shield of Arkansas - MN	N/A	N/A	N/A	N/A	N/A	N/A	N/A
00740	Blue Cross and Blue Shield of Kansas City	10,915	8,413	8,026	77.08	73.53	2,589	23.72
00751	Blue Cross and Blue Shield of Montana	3,445	3,079	3,072	89.38	89.17	366	10.62
00780	Blue Cross and Blue Shield of Massachusetts - VT	8,036	7,267	7,034	90.43	87.53	943	11.73
00781	Blue Cross and Blue Shield of Massachusetts - NH	4,355	3,473	3,428	79.75	78.71	961	22.07
00801	Blue Shield of Western New York	26,261	24,036	23,846	91.53	90.80	2,327	8.86
00803	Empire Blue Cross and Blue Shield	122,831	111,118	110,618	90.46	90.06	12,728	10.36
00820	Blue Cross & Blue Shield of North Dakota	6,594	6,021	5,330	91.31	80.83	715	10.84
00824	Blue Cross & Blue Shield of Colorado	18,170	17,439	16,591	95.98	91.31	771	4.24
00825	Blue Cross & Blue Shield of Wyoming	1,863	1,653	1,580	88.73	84.81	217	11.65
00860	Xact Medicare Services - NJ	46,629	40,408	38,894	86.66	83.41	6,551	14.05
00865	Pennsylvania Blue Shield	95,869	83,821	81,996	87.43	85.53	12,692	13.24
00870	MetraHealth - RI	5,250	4,769	4,571	90.84	87.07	482	9.18
00880	Palmetto Government Benefits Administrators	13,570	11,920	11,109	87.84	81.86	1,714	12.63
00900	Blue Cross & Blue Shield of Texas, Inc.	82,155	74,286	70,908	90.42	86.31	8,209	9.99
00901	Blue Cross & Blue Shield of Texas, Inc. - MD	23,149	21,562	20,788	93.14	89.80	1,845	7.97
00910	Blue Cross & Blue Shield of Utah	7,198	7,041	6,995	97.82	97.18	158	2.20
00951	Wisconsin Physician Service Corporation	24,355	22,621	22,600	92.88	92.79	1,917	7.87

TABLE 3-9 (continued)

INTEGRITY OF BUSINESS ZIP CODES ON THE PHYSICIAN REGISTRY, JULY 1996

CARRIER			FEASIBLE ZIP CODES					
			COUNTS		PERCENT		INSUFFICIENT DATA	
ID#	Name	Total Active Practice Settings	Max	Min	Max	Min	Count	Percent
00973	Triple-S - PR	11,592	2,623	2,314	22.63	19.96	8,988	77.54
00974	Triple-S - VI	8	0	0	0.00	0.00	0	0.00
01020[b]	Aetna Life Insurance Company - AK	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01030	Aetna Life Insurance Company - AZ	16,852	15,928	15,495	94.52	91.95	962	5.71
01040[b]	Aetna Life Insurance Company - GA	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01120	Aetna Life Insurance Company - HI	5,336	4,857	4,824	91.02	90.40	506	9.48
01290	Aetna Life Insurance Company - NV	4,403	4,083	3,907	92.73	88.73	322	7.31
01360	Aetna Life Insurance Company - NM	6,374	5,876	5,566	92.19	87.32	518	8.13
01370	Aetna Life Insurance Company - OK	10,818	10,219	9,975	94.46	92.21	613	5.67
01380	Aetna Life Insurance Company - OR	11,892	10,467	10,226	88.02	85.99	1,555	13.08
01390	Aetna Life Insurance Company - WA	24,035	20,429	19,949	85.00	83.00	3,731	15.52
02050	Transamerica	115,507	96,255	93,361	83.33	80.83	20,148	17.44
05130	Connecticut General Insurance Co. of N. America - ID	4,182	3,001	2,775	71.76	66.36	1,194	28.55
05440	Connecticut General Insurance Co. of N. America - TN	35,757	17,451	15,897	48.80	44.46	18,880	52.80
05535	Connecticut General Insurance Co. of N. America - NC	45,001	22,638	19,525	50.31	43.39	22,488	49.97
10072	Railroad Retirement Board - Augusta, GA	260,316	58,744	55,351	22.57	21.26	202,328	77.72
10074[a]	Railroad Retirement Board - Salt Lake City, UT	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10230	MetraHealth - CT	15,538	14,834	13,396	95.47	86.21	740	4.76
10240	MetraHealth - MN	28,226	25,621	24,094	90.77	85.36	3,002	10.64
10250	MetraHealth - MI	8,999	7,625	7,056	84.73	78.41	1,392	15.47
10490	MetraHealth - VA	18,159	16,312	15,507	89.83	85.40	1,955	10.77
11260	General American Life Insurance Company	21,583	19,408	19,111	89.92	88.55	2,315	10.73
14330	Group Health Incorporated	10,961	10,409	10,028	94.96	91.49	595	5.43
16360	Nationwide Mutual Company - OH	61,654	56,978	55,493	92.42	90.01	4,992	8.10
16510	Nationwide Mutual Company - WV	9,227	7,600	7,247	82.37	78.54	1,666	18.06
21200	Blue Cross & Blue Shield of Massachusetts - ME	7,215	6,443	6,259	89.30	86.75	778	10.78

NOTES:
[a] missing from Finalist Report
[b] missing page 1 and 2.

SOURCE: Health Economics Research, Inc. tabulations from statistical reports produced by Mike Gorham and Diane Rodriguez of TriCor using July 1996 Physician Registry.

had the lowest maximum rates at 22 percent. The maximum rates for Connecticut General's Tennessee and North Carolina contracts were also low at 49 percent and 50 percent, respectively. Aside from these five areas, the lowest maximum rate was 71 percent for Connecticut General (Idaho) and AdminaStar (Kentucky). The highest maximum rate was 97.8 percent for Blue Cross and Blue Shield of Utah. Of the 59 carriers, 45 had maximum rates greater than 80 percent. The average maximum rate, including all carriers, was 78 percent and excluding the three worst, was 88 percent. The minimum rates were usually within ten percentage points of the maximum rates – the difference was greater than ten points for only three carriers (the two areas services by Arkansas BC/BS and North Dakota BC/BS). The average minimum rate, including all carriers, was 74 percent and excluding the three worst, was 84 percent.

Also shown in Table 3-9 are the number of records with insufficient data for FINALIST to produce correct mailing addresses. Including all carriers, 23 percent of the active practice settings had insufficient data and excluding the three worst carriers, 13 percent of the active practice settings had insufficient data. Note that some of the records for which FINALIST could not produce a correct mailing address might have had valid zip codes for the physician office's address.

3.1.4 Group Practice Indicator

In the previous study of Registry data elements, the analysis of the group practice indicator was limited to whether the data element had a feasible or valid code.[22] By taking advantage of the recently available Group Membership File, a more extensive analysis can be performed. The Group Membership File contains information on each physician belonging to a group practice. Among the data elements in the file are:

- the group practice's:
  - UPIN
  - PIN

[22]Op. Cit., *Carrier Analysis*.

- the individual physician's:
    - UPIN
    - member PIN.

The PIN and UPIN for each active practice setting in the July 1996 Registry that was designated as a group practice setting was compared to the individual physician's values in the Group Membership File. (Registry practice settings from the RRB, non-physicians, and solo practices were excluded from the analysis.) When matching on the basis of the individual physician's PIN, only 61 percent of the nearly 790,000 group practice settings found in the Registry could be found in the Group Membership File (Table 3-10). The rates for individual carriers ranged from 91 percent (Health Care Corp. - Illinois and Empire BC/BS - New York) to less than one percent for each of the four areas serviced by Pennsylvania BS.[23] For most carriers, the match rate based on a combination of the individual physician's PIN and UPIN is about the same as for the PIN – only three carriers had PIN/UPIN matches more than ten percentage points lower than their PIN match rates: Florida BC/BS, Montana BC/BS, and Colorado BC/BS.

The PIN match exceeded 80 percent for only 11 carriers. There are several reasons why the match rates might be so low. First, the Group Membership File is from 1995 and there might have been changes in PIN formats for some carriers between the 1995 and 1996. Second, some carriers might have submitted different PINs for use in the Group Membership File than those they submitted to the Registry. Third, the 1995 Group Membership File might not be complete, that is, records for members of some group practices were not included in the Group Membership File. Fourth, the 1996 Registry file may contain group practice settings whose DRIP status indicates that they are active while, in fact, the physician left the group prior to the construction of the Group Membership File. Fifth, the group practice indicator, used to select Registry records for matching, may be inaccurate.

3.2 Comparisons Between Data Elements Common to the Registry and NCH Claims

Two types of analysis are performed in this section: (1) checking for the presence in the Registry of UPINs and PINs found in NCH claims data and (2) the consistency of data

[23]Pennsylvania BS indicated they had problems transmitting their group data to the Registry.

TABLE 3-10

PRESENCE OF REGISTRY GROUP PHYSICIANS IN THE GROUP MEMBERSHIP FILE

CARRIER			REGISTRY PIN IN GROUP FILE		REGISTRY UPIN/PIN IN GROUP FILE	
Number	Service Area	Total Active Registry Group Practice Settings	Number Found	Percent	Number Found	Percent
00510	Alabama BC/BS	13,173	7,472	56.72 %	7,461	56.64 %
00520	Arkansas BC/BS, AR	8,302	5,146	61.99	5,132	61.82
00528	Arkansas BC/BS, LA	22,733	11,260	49.53	11,015	48.45
00542	California BS	2,546	1,499	58.88	1,495	58.72
00570	Pennsylvania BS, DE	1,211	3	0.25	3	0.25
00580	Pennsylvania BS, DC	8,847	24	0.27	24	0.27
00590	Florida BC/BS	35,390	22,074	62.37	13,097	37.01
00621	Illinois BC/BS	40,075	36,520	91.13	36,073	90.01
00623	Health Care Service Corporation, MI	30,733	24,690	80.34	24,187	78.70
00630	Indiana BC/BS	23,725	3,540	14.92	3,517	14.82
00640	Iowa BS	8,774	7,804	88.94	7,225	82.35
00650	Kansas BS, KS	5,613	4,485	79.90	4,464	79.53
00655	Kansas BS, NE	3,767	2,702	71.73	2,690	71.41
00660	Kentucky BC/BS	15,713	10,658	67.83	10,596	67.43
00700	C&S Administrative Services, MA	27,107	18,091	66.74	17,391	64.16
00740	Kansas BS, MO	7,672	5,313	69.25	5,288	68.93
00751	Montana BC/BS	1,936	1,694	87.50	1,181	61.00
00780	C&S Administrative Services, NH	3,499	2,505	71.59	2,373	67.82
00781	C&S Administrative Services, VT	1,861	1,301	69.91	1,196	64.27
00801	Blue Shield of Western New York	14,560	11,899	81.72	11,764	80.80
00803	Empire BC/BS, NY	52,753	48,153	91.28	48,043	91.07
00820	North Dakota BC/BS, ND-SD	3,979	3,584	90.07	3,256	81.83
00824	Colorado BC/BS, CO	11,422	9,321	81.61	7,323	64.11
00825	North Dakota BC/BS, WY	1,123	864	76.94	847	75.42
00860	Pennsylvania BS, NJ	12,502	98	0.78	98	0.78
00865	Pennsylvania BS, PA	16,087	45	0.28	45	0.28
00870	Rhode Island Blue Shield	2,968	2,294	77.29	2,289	77.12
00880	South Carolina BC/BS	10,425	3,399	32.60	3,358	32.21
00900	Texas BC/BS	43,570	35,575	81.65	34,462	79.10
00901	Texas BC/BS, MD	16,733	14,132	84.46	14,021	83.79

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TABLE 3-10

PRESENCE OF REGISTRY GROUP PHYSICIANS IN THE GROUP MEMBERSHIP FILE

CARRIER			REGISTRY PIN IN GROUP FILE		REGISTRY UPIN/PIN IN GROUP FILE	
Number	Service Area	Total Active Registry Group Practice Settings	Number Found	Percent	Number Found	Percent
00910	Utah BC/BS	4,908	534	10.88	503	10.25
00951	Wisconsin Physician Service	20,312	9,858	48.53	9,835	48.42
00973	S.S.S., PR	3,537	1,529	43.23	1,511	42.72
01020	Aetna Life and Casualty, AK	896	812	90.63	764	85.27
01030	Aetna Life and Casualty, AZ	11,018	8,011	72.71	7,980	72.43
01040	Aetna Life and Casualty, GA	21,779	6,830	31.36	6,748	30.98
01120	Aetna Life and Casualty, HI	3,318	319	9.61	318	9.58
01290	Aetna Life and Casualty, NV	2,656	1,901	71.57	1,890	71.16
01360	Aetna Life and Casualty, NM	4,098	732	17.86	713	17.40
01370	Aetna Life and Casualty, OK	5,271	786	14.91	733	13.91
01380	Aetna Life and Casualty, OR	6,835	5,386	78.80	5,302	77.57
01390	Aetna Life and Casualty, WA	11,230	6,178	55.01	5,426	48.32
02050	Transamerica Occidental	80,888	62,256	76.97	61,936	76.57
05130	Equicor Life Assurance, ID	2,405	1,283	53.35	1,281	53.26
05440	Equicor Life Assurance, TN	20,122	8,678	43.13	8,660	43.04
05535	Prudential, NC	27,210	12,482	45.87	12,439	45.71
10230	Travelers Insurance Co., CT	10,127	6,122	60.45	6,059	59.83
10240	Travelers Insurance Co., MN	22,804	6,720	29.47	6,688	29.33
10250	Travelers Insurance Co., MS	6,280	3,135	49.92	3,096	49.30
10490	Travelers Insurance Co., VA	13,617	6,370	46.78	6,336	46.53
11260	Missouri General Am. , MO	14,832	8,865	59.77	8,826	59.51
14330	Group Health Insurance, NY	5,356	1,158	21.62	1,072	20.01
16360	Nationwide Insurance Co., OH	34,858	21,330	61.19	20,231	58.04
16510	Nationwide Insurance, WV	4,331	2,477	57.19	2,384	55.05
21200	C&S Administrative Serv.,ME	2,467	1,469	59.55	1,339	54.28

SOURCE: July 1996 Physician Registry File and the 1995 Group Membership File.

elements common to both the Registry and NCH claims data. To minimize discrepancies between the Registry and claims data arising from normal ongoing changes to the Registry, the January 1994 Registry file and only those claims (line items) from the fourth quarter of the 1993 Physician Part B sample were used.

3.2.1 Presence in the Registry of UPINs found in NCH Claims Data

Each claim from a physician submitted to the Common Working File (CWF) should have a performing UPIN on it. The UPIN is added by the carrier to whom the claim was initially submitted. Since the HCFA-1500 claim form does not contain a cell (item number) for the performing UPIN, the carrier must assign it on the basis of the carrier-issued PIN indicated on the claim (line item).[24] In principle, then, each UPIN found in the Physician Part B sample should be associated with a PIN in carriers' provider files. If a large number of UPINs found in the Physician Part B sample can not be found in the Registry, this may be indicative of a breakdown in the maintenance of provider files and/or claims processing. Small discrepancy rates probably reflect the fact that the claims data are not exactly matched in time with the Registry file.

UPINs found in the 1993 Physician Part B sample (fourth quarter) were compared, by carrier, to UPINs on the January 1994 Registry to find matches. The overall match rate was 99.77 percent by line items and 98.48 percent by distinct UPINs (Table 3-11). The match rate was exactly 100 percent for only three carriers: Minnesota BC/BS, North Dakota BC/BS (Wyoming), and Travelers Insurance Company (Minnesota). UPINs on nearly four percent of the line items for Nationwide Insurance Company (Ohio) could not be found in the Registry. Of the 536 distinct UPINs for Nationwide (Ohio), only 420 (78.4 percent) could be found in the Registry. The results for Nationwide (Ohio) imply that there is a relatively large number of physicians with low claims activity that account for most of the non-matches. Nationwide's West Virginia operations also had the second highest rate of non-matches for distinct UPINs. The UPIN non-match rate was less than one percent for line items for all but three of the carriers – Nationwide (Ohio), Aetna (Georgia), and Group Health Insurance (New York). The UPIN non-match rate was less than one percent for distinct UPINs for slightly over half of the

[24]See Chapter 4 of the *Interim Report* for this study for details on the maintenance of provider files and claims processing.

TABLE 3-11

COMPARISON OF UPINs BETWEEN 1993 PHYSICIAN SAMPLE NCH CLAIMS AND 1994 REGISTRY

CARRIER		Total Line Items (With a UPIN)	Distinct UPINs	Number of Line Items with Matching UPINs in Registry	Number of Distinct UPINs Matching to Registry	Percent of Line Items Without Matching UPIN in Registry	Percent of Distinct UPINs Without Matching UPIN in Registry
Number	Name and Area						
16360	Nationwide Insurance Co., OH	169,440	536	162,834	420	3.90 %	21.64 %
16510	Nationwide Insurance, WV	158,207	404	157,906	379	0.19	6.19
00570	Pennsylvania BS, DE	107,355	324	106,433	313	0.86	3.40
01040	Aetna Life and Casualty, GA	173,829	434	171,843	423	1.14	2.53
10250	Travelers Insurance Co., MS	181,807	372	181,200	363	0.33	2.42
01360	Aetna Life and Casualty, NM	108,094	425	107,751	415	0.32	2.35
01020	Aetna Life and Casualty, AK	39,122	349	39,083	343	0.10	1.72
00973	S.S.S., PR	151,756	473	151,684	465	0.05	1.69
00655	Kansas BS, NE	220,193	476	219,124	468	0.49	1.68
00690	Maryland Blue Shield	157,901	428	157,568	421	0.21	1.64
00860	Pennsylvania BS, NJ	186,701	504	186,553	496	0.08	1.59
10490	Travelers Insurance Co., VA	149,519	342	148,221	337	0.87	1.46
00528	Arkansas BC/BS, LA	225,560	494	225,200	487	0.16	1.42
21200	C&S Administrative Serv.,ME	133,959	355	133,908	350	0.04	1.41
05130	Equicor Life Assurance, ID	119,151	364	118,034	359	0.94	1.37
14330	Group Health Insurance, NY	35,257	74	34,485	73	2.19	1.35
05440	Equicor Life Assurance, TN	218,749	455	218,654	449	0.04	1.32
11260	Missouri General Am. , MO	167,812	456	166,987	450	0.49	1.32
00880	South Carolina BC/BS	180,934	381	180,900	376	0.02	1.31
01030	Aetna Life and Casualty, AZ	232,786	624	232,677	616	0.05	1.28
00870	Rhode Island Blue Shield	117,106	319	117,087	315	0.02	1.25
01370	Aetna Life and Casualty, OK	180,034	414	179,773	409	0.14	1.21
00910	Utah BC/BS	96,361	441	96,333	436	0.03	1.13
01380	Aetna Life and Casualty, OR	102,219	444	102,161	439	0.06	1.13
00710	Michigan BC/BS	215,115	538	215,028	532	0.04	1.12
10230	Travelers Insurance Co., CT	143,250	389	143,086	385	0.11	1.03
00700	C&S Administrative Services, MA	155,476	503	155,426	498	0.03	0.99
00780	C&S Administrative Services, NH	226,441	810	225,712	802	0.32	0.99
00801	Blue Shield of Western New York	81,155	218	81,141	216	0.02	0.92
00660	Kentucky BC/BS	162,372	351	162,354	348	0.01	0.85
00751	Montana BC/BS	120,538	356	120,409	353	0.11	0.84

TABLE 3-11 (continued)

COMPARISON OF UPINs BETWEEN 1993 PHYSICIAN SAMPLE NCH CLAIMS AND 1994 REGISTRY

CARRIER		Total Line Items (With a UPIN)	Distinct UPINs	Number of Line Items with Matching UPINs in Registry	Number of Distinct UPINs Matching to Registry	Percent of Line Items Without Matching UPIN in Registry	Percent of Distinct UPINs Without Matching UPIN in Registry
Number	Name and Area						
00550	Colorado BC/BS	90,797	385	90,787	382	0.01	0.78
00520	Arkansas BC/BS, AR	226,730	399	226,636	396	0.04	0.75
00542	California BS	147,504	570	147,432	566	0.05	0.70
00865	Pennsylvania BS, PA	240,232	575	240,016	571	0.09	0.70
00640	Iowa BS	227,002	493	226,703	490	0.13	0.61
00630	Indiana BC/BS	196,348	503	196,246	500	0.05	0.60
00803	Empire BC/BS, NY	206,196	549	206,157	546	0.02	0.55
00590	Florida BC/BS	358,333	567	358,324	564	0.00	0.53
00820	North Dakota BC/BS, ND-SD	261,440	583	261,144	580	0.11	0.51
01120	Aetna Life and Casualty, HI	84,549	399	84,473	397	0.09	0.50
01290	Aetna Life and Casualty, NV	139,939	413	139,628	411	0.22	0.48
05535	Prudential, NC	161,074	417	161,026	415	0.03	0.48
00580	Pennsylvania BS, DC	117,694	436	117,657	434	0.03	0.46
02050	Transamerica Occidental	167,404	553	167,396	551	0.00	0.36
00900	Texas BC/BS	212,789	562	212,785	560	0.00	0.36
00932	Washington Physician Service	155,332	601	155,315	599	0.01	0.33
00740	Kansas BS, MO	124,551	325	124,544	324	0.01	0.31
00951	Wisconsin Physician Service	157,387	384	157,386	383	0.00	0.26
00510	Alabama BC/BS	218,754	392	218,753	391	0.00	0.26
00650	Kansas BS, KS	237,882	462	237,881	461	0.00	0.22
00621	Illinois BC/BS	222,376	647	222,358	646	0.01	0.15
00720	Minnesota BC/BS	61,944	159	61,944	159	0.00	0.00
00825	North Dakota BC/BS, WY	46,744	211	46,744	211	0.00	0.00
10240	Travelers Insurance Co., MN	68,150	321	68,150	321	0.00	0.00

NOTE: Claims from Vermont are processed under C&S Administrative's New Hampshire carrier number. There were no fourth quarter claims from the Virgin Islands and the two RRB carriers were excluded from the analysis.

SOURCE: Health Economics Research, Inc. tabulations using fourth quarter line items from the 1993 Part B Physician Sample and Physician Registry (January, 1994).

carriers. The small non-match rates for many of the carriers are probably mostly due to the inability to compare claims and the Registry at the exact same time.

3.2.2 Presence in the Registry of PINs found in NCH Claims Data

This analysis is a follow-up to one of the "preliminary" analyses presented in Chapter 3 of the *Interim Report*. Its purpose is to incorporate information from the seven carrier interviews to improve the PIN match rates found in Table 3-3 of the *Interim Report*. Algorithms for matching PINs could only be improved for two carriers: C & S Administrative Services (Massachusetts) and Pennsylvania BS (Pennsylvania).[25] Thus, except for minor differences due to the use of the January instead of the April 1994 Registry and only line items from the fourth quarter of 1993, the only major differences in the match rates should be for these two carriers.

The results of the new PIN analysis are shown in Table 3-12. It generally appears, that the non-match rates for distinct PINs are somewhat higher in Table 3-12 than in the *Interim Report*. This is apparently due to changes described above. The match (non-match) rates for both PINs on line items and distinct PINs are highest (lowest) for C & S Administrative Services (Massachusetts). The two PIN non-match rates for Pennsylvania BS (Pennsylvania) are in the top half of all carriers.

The PIN matching algorithm for California BS (Northern California) could not be improved because only individual PINs are present in the claims data. For physicians that only belong to group practices, the only PINs for them in the Registry are PINs assigned to them as group practice members. As can be seen in Table 3-8, the group practice PINs have a completely different format from individual PINs. They appear to comprise a separate unique identifier system. Without a crosswalk, thus, the PIN match rates for California BS can not be improved. Note that as of December 1, 1996, California BS is no longer the carrier for Northern California. Nine carriers were dropped from the analysis because PIN matching rules could not be developed for them (see *Interim Report*, Chapter 3).

To interpret the results and implications of this section properly for the next section's analyses, it is important to understand what is meant by "matching PINs." Consider the case illustrated in Panel A of Exhibit 3-2. The hypothetical carrier submitted two group practice

[25]The PIN-matching algorithms can be found in Appendix A of the *Interim Report*.

TABLE 3-12

COMPARISON OF PINs BETWEEN 1993 PHYSICIAN SAMPLE NCH CLAIMS AND 1994 REGISTRY

CARRIER							
Number	Name and Area	Total Line Items (With a PIN)	Distinct PINs	Number of Line Items with Matching PINs in Registry	Number of Distinct PINs Matching to Registry	Percent of Line Items Without Matching PIN in Registry	Percent of Distinct PINs Without Matching PIN in Registry
00880	South Carolina BC/BS	180,934	470	35,892	144	80.16 %	69.36 %
00550	Colorado BC/BS	90,797	409	31,233	166	65.60	59.41
00640	Iowa BS	227,002	638	111,599	317	50.84	50.31
00860	Pennsylvania BS, NJ	186,701	594	85,526	300	54.19	49.49
00825	North Dakota BC/BS, WY	46,744	221	18,763	113	59.86	48.87
16360	Nationwide Insurance Co., OH	169,440	669	115,668	346	31.74	48.28
00820	North Dakota BC/BS, ND-SD	261,440	460	137,897	274	47.25	40.43
16510	Nationwide Insurance, WV	158,207	531	109,681	330	30.67	37.85
00542	California BS, No. CA	145,504	578	111,197	399	24.61	30.97
00870	Rhode Island Blue Shield	117,106	405	93,088	339	20.51	16.30
00932	Washington Physician Service	155,332	823	142,090	700	8.52	14.95
14330	Group Health Insurance, NY	35,257	89	30,978	77	12.14	13.48
05440	Equicor Life Assurance, TN	218,749	557	204,059	488	6.72	12.39
01040	Aetna Life and Casualty, GA	173,829	547	164,940	486	5.11	11.15
00528	Arkansas BC/BS, LA	225,560	693	214,379	631	4.96	8.95
10250	Travelers Insurance Co., MS	181,807	466	175,412	431	3.52	7.51
00520	Arkansas BC/BS, AR	226,730	531	211,880	494	6.55	6.97
00865	Pennsylvania BS, PA	240,232	754	230,905	706	3.88	6.37
05130	Equicor Life Assurance, ID	119,151	437	113,470	411	4.77	5.95
05535	Prudential, NC	161,074	527	155,677	496	3.35	5.88
01020	Aetna Life and Casualty, AK	39,122	408	38,209	385	2.33	5.64
10240	Travelers Insurance Co., MN	68,150	373	65,428	352	3.99	5.63
10490	Travelers Insurance Co., VA	149,519	422	148,212	399	0.87	5.45
00660	Kentucky BC/BS	162,372	462	158,698	437	2.26	5.41
01380	Aetna Life and Casualty, OR	102,219	525	101,718	498	0.49	5.14
00650	Kansas BS, KS	237,882	607	225,489	576	5.21	5.11
11260	Missouri General Am. , MO	167,812	612	165,586	581	1.33	5.07

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TABLE 3-12 (continued)

COMPARISON OF PINs BETWEEN 1993 PHYSICIAN SAMPLE NCH CLAIMS AND 1994 REGISTRY

CARRIER		Total Line Items (With a PIN)	Distinct PINs	Number of Line Items with Matching PINs in Registry	Number of Distinct PINs Matching to Registry	Percent of Line Items Without Matching PIN in Registry	Percent of Distinct PINs Without Matching PIN in Registry
Number	Name and Area						
00740	Kansas BS, MO	124,551	396	117,193	376	5.91	5.05
00973	S.S.S., PR	151,756	603	150,518	575	0.82	4.64
01290	Aetna Life and Casualty, NV	139,939	521	138,822	497	0.80	4.61
00655	Kansas BS, NE	220,193	586	213,394	560	3.09	4.44
10230	Travelers Insurance Co., CT	143,250	461	140,402	441	1.99	4.34
00951	Wisconsin Physician Service	157,387	435	151,600	417	3.68	4.14
01030	Aetna Life and Casualty, AZ	232,786	786	231,566	754	0.52	4.07
02050	Transamerica Occidental	167,404	722	166,332	694	0.64	3.88
01360	Aetna Life and Casualty, NM	108,094	512	107,612	498	0.45	2.73
00900	Texas BC/BS	212,789	685	212,529	667	0.12	2.63
00801	Blue Shield of Western New York	81,155	278	80,757	271	0.49	2.52
00630	Indiana BC/BS	196,348	677	195,078	660	0.65	2.51
01120	Aetna Life and Casualty, HI	84,549	460	84,295	449	0.30	2.39
00621	Illinois BC/BS	222,376	905	221,015	885	0.61	2.21
00720	Minnesota BC/BS	61,944	228	61,858	223	0.14	2.19
00590	Florida BC/BS	358,333	764	358,157	750	0.05	1.83
00780	C&S Administrative Services, NH	226,441	831	225,211	817	0.54	1.68
01370	Aetna Life and Casualty, OK	180,034	492	179,737	485	0.16	1.42
00510	Alabama BC/BS	218,754	500	218,694	493	0.03	1.40
00751	Montana BC/BS	120,538	431	120,468	425	0.06	1.39
00700	C&S Administrative Services, MA	155,476	519	155,426	514	0.03	0.96

NOTES: Claims from Pennsylvania Blue Shield (Delaware and District of Columbia), Maryland Blue Shield (Maryland), C& S Administrative Services (Maine), Michigan Blue Cross/Blue Shield (Michigan), Empire Blue Cross/Blue Shield (New York City area and downstate New York), Utah Blue Cross/Blue Shield (Utah), and the two Railroad Board carriers were not used in the tabulations (see text).

SOURCE: Health Economics Research, Inc. tabulations using fourth quarter line items from the 1993 Part B Physician Sample and the Physician Registry (January, 1994).

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EXHIBIT 3-2

CLAIMS' PINS AND REGISTRY PINS

PANEL A

PIN on Claim	Practice Setting Type	REGISTRY INFORMATION: PIN Component Group	PIN Component Individual	Parsed PIN
456	Group	489	456	456
	Group	726	456	456

PANEL B

PIN on Claim	Practice Setting Type	REGISTRY INFORMATION: PIN Component Group	PIN Component Individual	Parsed PIN
456	Group	489	456	456
	Group	726	456	456
	Solo		456	456

settings to the Registry for a physician. The PINs for the group practice settings have two components: (1) a group identifier and (2) an individual identifier (separated in Exhibit 3-2 by a dotted line). In processing claims, however, the carrier only uses the individual identifier. When searching the Registry for the PIN on the claim, an exact match can not be made. To "match" the PINs in the claims data to the PINs in the Registry for this carrier, it is necessary to parse the Registry PINs so that the individual identifier is extracted. In this way, PINs on the claims can be *associated* with PINs in the Registry. In such circumstances, however, PINs in the claims file can not be directly matched, except fortuitously, to the Registry practice setting in which medical care was provided. Note that this problem should not arise for those physicians that do not belong to group practices. Not all carriers, of course, have PIN systems as illustrated in Panel A.

A slight variation of the preceding example is illustrated by Panel B of Exhibit 3-2. The only difference between it and Panel A is that a "solo practice setting" for the physician is also present in the Registry. (Note that the solo setting may or may not represent an actual location where medical care is provided. That is, depending on the carrier, such records might be "placeholders" – records submitted to the Registry so that the individual identifier is available to Registry personnel.) Even though the individual identifier is present on one record for each physician, the PINs on the group practice settings were parsed since it was not known whether the solo records were real practice settings or placeholders and the consistency of their use by carriers. These issues are further discussed below.

3.2.3 Consistency of Selected Data Elements Common to the Registry and NCH Claims

One of HCFA's continuing concerns is that some practice setting-specific data elements in the NCH claims, such as specialty code, might not be accurate. HCFA hoped that Registry data could be used to validate such data elements on the claims. As previously noted, because of continuing changes made to records contained in carrier provider files, discrepancies between claims and Registry data can arise and, thus, 100 percent consistency is unlikely.

Another problem in comparing claims and Registry data was uncovered when trying to locate claims' PINs in the Registry.[26] This problem was discussed at the end of the preceding

[26]The consequences of the problem were discovered after the tables for this section had been produced.

section. When records, as illustrated in Exhibit 3-2, are present in the claims and Registry data, an exact match of the claim can not be made, except fortuitously, to the Registry practice setting in which medical care was provided. Discrepancies, then, between claims and Registry data can arise because the claim was not matched to the appropriate practice setting.[27]

Since not all physicians belong to group practices nor do all carriers maintain their data as illustrated in Exhibit 3-2, the results produced for this section were not discarded. The consistency rates shown in the tables should be interpreted as lower bounds. Consistency rates for data elements that should not vary much between practice settings (e.g., specialty code) are likely to be higher than those for that might vary considerably (e.g., zip code). Large departures from mean consistency rates for all carriers will be discussed as appropriate.

The consistency between the January 1994 Registry and fourth-quarter, 1993 NCH claims data was determined, by carrier, for the following selected data elements: specialty code, DRIP status, zip code, and Medicare participation status. Carrier-issued PINs on claims line items were used to match the line items to the appropriate practice setting on the Registry. All carriers except for the two RRB carriers were eligible for the analysis. Seven carriers dropped out of the analysis because their claims' PINs could not be matched to the Registry or because they had no claims activity in the fourth quarter of 1993 (i.e., SSS - Virgin Islands).

Overall, the PINs for 84.3 percent of the line items were found in the Registry (Table 3-13). The PIN match rates for Alabama BC/BS and C & S Administrative Services (Massachusetts) were nearly 100 percent. The PIN match rates for eight carriers were less than 50 percent: Empire BC/BS (New York) and North Dakota BC/BS (North Dakota & South Dakota), Utah BC/BS, South Carolina BC/BS, North Dakota BC/BS, Pennsylvania BS (New Jersey), and Iowa BS (Iowa).

The methodologies for performing PIN matches in Tables 3-12 and 3-13 differed. For Table 3-12, the UPIN on the claim was not matched to the Registry. For Table 3-13, in addition to the PIN, the claims' UPIN was matched to the Registry. The matching methodology for Table 3-13 is, thus, more stringent. Consequently, for those carriers whose records (either claims or Registry) have a PIN associated with more than one UPIN, the number of matches in Table 3-13 will be lower than in Table 3-12. About half the carriers had lower matches for Table

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[27]Yet another possible source of discrepancies between the Registry and claims data is that there are two different sources for the data elements. That is, some carriers do not have Registry data integrated with their provider file. For these carriers, Registry data is manually keyed into a separate file. Conversely, the provider file is the *usual* source of information for claims. (The prevalence of this practice is not known.) Discrepancies between these two carrier-maintained files, thus, can give rise to discrepancies between Registry and claims data.

TABLE 3-13

CONSISTENCY OF SELECTED DATA ELEMENTS BETWEEN NCH CLAIMS AND PHYSICIAN REGISTRY

CARRIER				SPECIALTY MATCH			ZIP CODE CONSISTENCY			
Number	Name	Total Line Items	PIN Registry Match	Primary	Secondary	Registry DRIP Status Consistent with Claim Date	Business = Billing*	Claim = Business	Claim = Billing	Medicare Participation Status Same
00510	Alabama BC/BS	218,754	218,694	218,504	0	218,656	172,645	212,642	0	215,522
00520	Arkansas BC/BS, AR	226,730	211,803	208,189	4	211,803	203,208	207,951	180	193,658
00528	Arkansas BC/BS, LA	225,560	214,264	212,882	12	214,202	186,653	211,571	0	196,699
00542	California BS	147,504	111,197	93,293	0	85,174	93,070	102,250	116	71,316
00550	Colorado BC/BS	90,797	31,232	30,775	0	31,232	28,673	28,575	2,500	30,540
00590	Florida BC/BS	358,333	357,854	347,764	0	351,741	273,585	276,995	37,387	301,220
00621	Illinois BC/BS	222,376	221,015	183,968	0	220,151	202,898	169,622	6,999	133,421
00630	Indiana BC/BS	196,348	195,043	194,897	0	194,978	157,764	183,520	7,489	186,800
00640	Iowa BS	227,002	110,688	110,618	0	108,782	108,423	101,946	2,013	98,223
00650	Kansas BS, KS	237,882	225,489	209,119	0	225,070	213,282	213,971	2,662	202,175
00655	Kansas BS, NE	220,193	212,668	212,094	3	210,686	199,388	199,195	1,649	182,417
00660	Kentucky BC/BS	162,372	158,698	155,214	153	154,363	124,778	155,162	692	153,071
00700	C&S Administrative Services, MA	155,476	155,426	110,485	3,335	154,303	155,382	93,194	44	124,822
00720	Minnesota BC/BS	61,944	61,589	55,076	1,429	61,578	53,148	58,247	0	48,364
00740	Kansas BS, MO	124,551	117,186	111,301	0	116,359	97,953	111,612	176	107,277
00751	Montana BC/BS	120,538	120,361	113,362	784	120,357	112,514	110,110	5,072	111,909
00780	C&S Administrative Services, NH	226,441	225,211	151,502	361	223,487	225,211	188,460	0	124,877
00801	Blue Shield of Western New York	81,155	79,148	75,722	0	79,148	79,148	68,735	0	56,777
00803	Empire BC/BS, NY	206,196	4,478	4,033	0	4,478	3,121	3,856	0	2,280
00820	North Dakota BC/BS, ND-SD	261,440	46,210	45,128	6	46,210	45,549	45,541	635	39,348
00825	North Dakota BC/BS, WY	46,744	18,672	18,667	0	18,287	17,365	16,895	1,307	14,429
00860	Pennsylvania BS, NJ	186,701	85,526	83,995	0	85,165	85,526	83,324	0	79,483
00865	Pennsylvania BS, PA	240,232	203,393	176,317	0	203,393	202,430	179,720	422	169,394
00870	Rhode Island Blue Shield	117,106	93,088	92,221	63	93,088	83,426	89,971	0	25,389
00880	South Carolina BC/BS	180,934	35,892	35,882	10	35,892	28,097	34,838	0	35,499
00900	Texas BC/BS	212,789	212,529	209,901	0	212,508	163,600	186,765	19,589	198,309
00910	Utah BC/BS	96,361	17,863	15,731	0	17,863	9,903	16,077	11	12,343
00932	Washington Physician Service	155,332	141,715	139,966	117	141,711	112,565	140,030	361	135,073
00951	Wisconsin Physician Service	157,387	148,783	139,046	0	148,538	104,759	139,689	2	125,467
00973	S.S.S., PR	151,756	150,207	149,637	20	150,207	48,515	115,517	2,085	145,063
01020	Aetna Life and Casualty, AK	39,122	38,193	35,807	2,034	38,189	36,374	34,541	532	34,363
01030	Aetna Life and Casualty, AZ	232,786	231,485	220,731	209	228,763	182,082	193,717	5,233	183,270
01040	Aetna Life and Casualty, GA	173,829	164,940	144,291	4	164,793	146,548	128,735	5,242	139,888
01120	Aetna Life and Casualty, HI	84,549	84,295	82,900	880	83,865	83,580	83,453	230	65,942
01290	Aetna Life and Casualty, NV	139,939	138,822	137,122	484	138,256	112,160	120,746	4,339	121,969
01360	Aetna Life and Casualty, NM	108,094	107,612	92,621	28	106,943	104,859	101,854	595	99,994

TABLE 3-13

CONSISTENCY OF SELECTED DATA ELEMENTS BETWEEN NCH CLAIMS AND PHYSICIAN REGISTRY

CARRIER				SPECIALTY MATCH			ZIP CODE CONSISTENCY			
Number	Name	Total Line Items	PIN Registry Match	Primary	Secondary	Registry DRIP Status Consistent with Claim Date	Business = Billing[a]	Claim = Business	Claim = Billing	Medicare Participation Status Same
01370	Aetna Life and Casualty, OK	180,034	179,668	178,151	0	179,660	175,320	163,341	2,379	150,431
01380	Aetna Life and Casualty, OR	102,219	101,718	100,995	107	100,848	90,485	90,991	1,715	91,674
02050	Transamerica Occidental	167,404	166,332	161,873	1,482	164,685	139,851	159,577	4	163,298
05130	Equicor Life Assurance, ID	119,151	113,470	113,341	0	110,395	94,112	105,094	3,353	96,343
05440	Equicor Life Assurance, TN	218,749	203,997	201,027	0	203,997	157,478	177,568	11,574	190,771
05535	Prudential, NC	161,074	155,677	151,687	0	154,922	132,313	138,946	5,742	146,640
10230	Travelers Insurance Co., CT	143,250	140,402	134,612	461	140,278	133,006	136,516	109	62,003
10240	Travelers Insurance Co., MN	68,150	65,420	63,579	381	62,585	42,967	63,751	95	32,253
10250	Travelers Insurance Co., MS	181,807	175,120	173,534	3	174,425	157,929	173,246	0	89,569
10490	Travelers Insurance Co., VA	149,[illegible]19	147,509	145,282	113	146,664	119,743	147,351	0	40,146
11260	Missouri General Am. , MO	167,812	165,347	129,483	2,062	162,941	155,781	36,459	569	137,033
14330	Group Health Insurance, NY	35,257	30,950	29,461	0	30,950	27,583	29,480	578	27,511
16360	Nationwide Insurance Co., OH	169,440	115,668	105,343	0	87,637	110,286	102,216	4,605	68,061
16510	Nationwide Insurance, WV	158,207	108,202	100,564	0	87,714	105,408	99,071	2,303	82,833
21200	C&S Administrative Serv.,ME	133,959	132,765	115,828	3,429	132,621	132,765	116,179	0	93,870

NOTES:
[a] Registry only.
Line items from Pennsylvania BS (Delaware and District of Columbia), SSS (Virgin Islands), Maryland BS, Michigan BC/BS, and the two RRB carriers were not included in the tabulations.
Line items from C&S Administrative's Vermont area are included in its New Hampshire values.

SOURCE Health Economics Research, Inc. tabulations using fourth quarter line items from the 1993 Part B Physician Sample and the Physician Registry (January, 1994).

3-13 than Table 3-12. Of the carriers that few matches in Table 3-13, the number of matches were usually within 100 of the value in Table 3-12. The difference in the number of matches for two carriers was quite high: the difference was about 25,000 for Pennsylvania BS (Pennsylvania) and over 90,000 for North Dakota BC/BS (ND & SD). The Pennsylvania BS result is an artifact of the first few years of the Registry's operation.[28]

The claims' specialty code was equal to the Registry's primary specialty for 93.8 percent of the line items (Table 3-14). (Note that this percentage and those that follow in this section are based the *PIN Registry Match* column of Table 3-13.) The specialty code match rate for several carriers was nearly 100 percent. The specialty code match rate for three carriers was less than 80 percent and another seven carriers had rates between 80 and 90 percent. When a match between the claims' specialty code and the Registry's primary specialty code could not be found, the claims' specialty code was then compared to the Registry's secondary specialty code. Overall, an additional 0.3 percent matches were found. For two carriers, Aetna's Georgia and Hawaii operations, the additional matches brought their overall specialty match rate up to about 99 percent.

The last expense date on line items was compared to the DRIP status for each practice setting on the Registry. The dates of line items were considered inconsistent with the DRIP status when the last expense date was after the change date for deactivated Registry practice settings. Overall, the last expense date on line items was consistent with the Registry DRIP status for 98.4 percent of the line items. Only three carriers – Nationwide's Ohio and West Virginia operations and California BS (Northern California) – had consistency rates less than 90 percent. Note that these carriers also had relatively low PIN match rates as well.

The zip code on line items was compared to the business and billing zip codes on the Registry. Since many towns have only one zip code and many physicians bill from their business address, the Registry's business and billing zip codes were compared first. On average, for those line items whose zip code could be found in either Registry zip code field, the Registry's business and billing zip codes were equal to each other 86.8 percent of the matches. The line items' zip code was first compared to the business zip code. In the event of a non-match, the billing zip code was checked. Overall, the match rate between the line item zip code and the business zip code was 88.4 percent. An additional two percent from matches

[28]See Chapter 4, Page 4-2 for details.

TABLE 3-14

CONSISTENCY OF SELECTED DATA ELEMENTS BETWEEN NCH CLAIMS AND PHYSICIAN REGISTRY (PERCENT)

CARRIER			SPECIALTY MATCH			ZIP CODE CONSISTENCY			
Number	Name	PIN Registry Match	Primary	Secondary	Registry DRIP Status Consistent with Claim Date	Business = Billing[a]	Claim = Business	Claim = Billing	Medicare Participation Status Same
00510	Alabama BC/BS	218,694	99.9%	0.0%	100.0%	78.9%	97.2%	0.0%	98.5%
00520	Arkansas BC/BS, AR	211,803	98.3	0.0	100.0	95.9	98.2	0.1	91.4
00528	Arkansas BC/BS, LA	214,264	99.4	0.0	100.0	87.1	98.7	0.0	91.8
00542	California BS	111,197	83.9	0.0	76.6	83.7	92.0	0.1	64.1
00550	Colorado BC/BS	31,232	98.5	0.0	100.0	91.8	91.5	8.0	97.8
00590	Florida BC/BS	357,854	97.2	0.0	98.3	76.5	77.4	10.4	84.2
00621	Illinois BC/BS	221,015	83.2	0.0	99.6	91.8	76.7	3.2	60.4
00630	Indiana BC/BS	195,043	99.9	0.0	100.0	80.9	94.1	3.8	95.8
00640	Iowa BS	110,688	99.9	0.0	98.3	98.0	92.1	1.8	88.7
00650	Kansas BS, KS	225,489	92.7	0.0	99.8	94.6	94.9	1.2	89.7
00655	Kansas BS, NE	212,668	99.7	0.0	99.1	93.8	93.7	0.8	85.8
00660	Kentucky BC/BS	158,698	97.8	0.1	97.3	78.6	97.8	0.4	96.5
00700	C&S Administrative Services, MA	155,426	71.1	2.1	99.3	100.0	60.0	0.0	80.3
00720	Minnesota BC/BS	61,589	89.4	2.3	100.0	86.3	94.6	0.0	78.5
00740	Kansas BS, MO	117,186	95.0	0.0	99.3	83.6	95.2	0.2	91.5
00751	Montana BC/BS	120,361	94.2	0.7	100.0	93.5	91.5	4.2	93.0
00780	C&S Administrative Services, NH	225,211	67.3	0.2	99.2	100.0	83.7	0.0	55.4
00801	Blue Shield of Western New York	79,148	95.7	0.0	100.0	100.0	86.8	0.0	71.7
00803	Empire BC/BS, NY	4,478	90.1	0.0	100.0	69.7	86.1	0.0	50.9
00820	North Dakota BC/BS, ND-SD	46,210	97.7	0.0	100.0	98.6	98.6	1.4	85.2
00825	North Dakota BC/BS, WY	18,672	100.0	0.0	97.9	93.0	90.5	7.0	77.3
00860	Pennsylvania BS, NJ	85,526	98.2	0.0	99.6	100.0	97.4	0.0	92.9
00865	Pennsylvania BS, PA	203,393	86.7	0.0	100.0	99.5	88.4	0.2	83.3
00870	Rhode Island Blue Shield	93,088	99.1	0.1	100.0	89.6	96.7	0.0	27.3
00880	South Carolina BC/BS	35,892	100.0	0.0	100.0	78.3	97.1	0.0	98.9
00900	Texas BC/BS	212,529	98.8	0.0	100.0	77.0	87.9	9.2	93.3
00910	Utah BC/BS	17,863	88.1	0.0	100.0	55.4	90.0	0.1	69.1
00932	Washington Physician Service	141,715	98.8	0.1	100.0	79.4	98.8	0.3	95.3
00951	Wisconsin Physician Service	148,783	93.5	0.0	99.8	70.4	93.9	0.0	84.3
00973	S.S.S., PR	150,207	99.6	0.0	100.0	32.3	76.9	1.4	96.6
01020	Aetna Life and Casualty, AK	38,193	93.8	5.3	100.0	95.2	90.4	1.4	90.0
01030	Aetna Life and Casualty, AZ	231,485	95.4	0.1	98.8	78.7	83.7	2.3	79.2
01040	Aetna Life and Casualty, GA	164,940	87.5	0.0	99.9	88.8	78.0	3.2	84.8
01120	Aetna Life and Casualty, HI	84,295	98.3	1.0	99.5	99.2	99.0	0.3	78.2
01290	Aetna Life and Casualty, NV	138,822	98.8	0.3	99.6	80.8	87.0	3.1	87.9
01360	Aetna Life and Casualty, NM	107,612	86.1	0.0	99.4	97.4	94.6	0.6	92.9

TABLE 3-14

CONSISTENCY OF SELECTED DATA ELEMENTS BETWEEN NCH CLAIMS AND PHYSICIAN REGISTRY

CARRIER			SPECIALTY MATCH			ZIP CODE CONSISTENCY			
Number	Name	PIN Registry Match	Primary	Secondary	Registry DRIP Status Consistent with Claim Date	Business = Billing[a]	Claim = Business	Claim = Billing	Medicare Participation Status Same
01370	Aetna Life and Casualty, OK	179,668	99.2%	0.0%	100.0%	97.6%	90.9%	1.3%	83.7%
01380	Aetna Life and Casualty, OR	101,718	99.3	0.1	99.1	89.0	89.5	1.7	90.1
02050	Transamerica Occidental	166,332	97.3	0.9	99.0	84.1	95.9	0.0	98.2
05130	Equicor Life Assurance, ID	113,470	99.9	0.0	97.3	82.9	92.6	3.0	84.9
05440	Equicor Life Assurance, TN	203,997	98.5	0.0	100.0	77.2	87.0	5.7	93.5
05535	Prudential, NC	155,677	97.4	0.0	99.5	85.0	89.3	3.7	94.2
10230	Travelers Insurance Co., CT	140,402	95.9	0.3	99.9	94.7	97.2	0.1	44.2
10240	Travelers Insurance Co., MN	65,420	97.2	0.6	95.7	65.7	97.4	0.1	49.3
10250	Travelers Insurance Co., MS	175,120	99.1	0.0	99.6	90.2	98.9	0.0	51.1
10490	Travelers Insurance Co., VA	147,509	98.5	0.1	99.4	81.2	99.9	0.0	27.2
11260	Missouri General Am. , MO	165,347	78.3	1.2	98.5	94.2	22.0	0.3	82.9
14330	Group Health Insurance, NY	30,950	95.2	0.0	100.0	89.1	95.3	1.9	88.9
16360	Nationwide Insurance Co., OH	115,668	91.1	0.0	75.8	95.3	88.4	4.0	58.8
16510	Nationwide Insurance, WV	108,202	92.9	0.0	81.1	97.4	91.6	2.1	76.6
21200	C&S Administrative Serv.,ME	132,765	87.2	2.6	99.9	100.0	87.5	0.0	70.7
AVERAGE			93.8	0.3	98.4	86.8	88.4	2.0	81.1

NOTES:

[a] Registry only.

Line items from Pennsylvania BS (Delaware and District of Columbia), SSS (Virgin islands), Maryland BS, Michigan BC/BS, and the two RRB carriers were not included in the tabulations.

Line items from C&S Administrative's Vermont area are included in its New Hampshire values.

SOURCE Health Economics Research, Inc. tabulations using fourth quarter line items from the 1993 Part B Physician Sample and the Physician Registry (January, 1994).

with the billing zip code brought the overall match rate up to 90.4 percent. The match rate between the line item zip codes and the Registry's business zip code was about 99 percent for four carriers. The match rate between the line item zip codes and the Registry's business zip code was less than 80 percent for six carriers. Of these six carriers, one had an additional 10.4 percent matches with the billing zip code, bringing its overall match rate up to 88.1 percent (Florida BC/BS).[29] The match rates for Missouri General American (Missouri) at 22 percent and C & S Administrative Services (Massachusetts) at 60 percent are much lower than other carriers. While part of C&S' low rate can be ascribed to the methodological problem illustrated in Exhibit 3-2, other factors might contribute to its low rate. While it is true that both carriers have large cities with many zip codes, so do other carriers such as Group Health Insurance (New York City).

The Medicare participation status on line items was compared to its Registry value. Prior to the comparison, the Medicare participation status on line items had to be derived from a NCH data element that was a composite of participation status and assignment status. About 81 percent of the line items had a Medicare participation status that was the same as recorded in the Registry. The match rate was greater than 95 percent for eight carriers and less than 60 percent for another eight carriers. Five of these carriers, the four areas serviced by Travelers and Rhode Island BC/BS, had matching rates less than 50 percent. (All five of these carrier contracts are now held by MetraHealth.) Medicare participation status is often renewed during the fourth quarter of each year. This might account for the relatively low overall 81 percent match rate.

In addition to the four data elements examined in this section, it had been planned to compare the Registry's practice type variable with its claims counterpart. A preliminary investigation of the claims version, however, revealed serious coding problems. For instance, about one third of the line items indicate that the service was provided by a supplier (Exhibit 3-3). Since the Physician Part B sample was created on the basis of UPINs, all of the providers should be physicians. With such serious coding problems for the practice type variable present in the line items, the planned comparison was not performed.

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[29]This may indicate confusion by the carrier about which field records the business versus the billing zip code.

EXHIBIT 3-3

CWFB PROVIDER TYPE CODE ON PHYSICIAN SAMPLE PART B CLAIMS

		FREQUENCY	
Description	Code	Count	Percent
Clincs, groups, etc.	0	16,994	0.2 %
Solo practitioners	1	3,275,059	37.0
Suppliers	2	2,957,681	33.4
Institutional providers	3	84,567	1.0
Independent laboratories	4	41,767	0.5
Clinics (multiple specialties)	5	50,442	0.6
Groups (single specialty)	6	2,193	0.0
Other entities	7	2,419,894	27.3
Incorrect code	8	1,423	0.0
Total		8,850,020	100.0

NOTE: Line items from the 4th quarter, 1993 were used for the tabulations.

3.3 Summary

The key findings from each of the preceding sections are summarized in the next section and is followed by a discussion of the implications of the key findings from both operational and research perspectives.

3.3.1 Key Findings

State License Numbers

From the four analyses performed on state license numbers, the key findings are:

- Evidence was found for the association of more than one UPIN per physician (state license number), possible sources for this association include:
  - issuance of multiple UPINs per physician;
  - transcription errors in the Registry.
- Evidence was found of the association of more than one license number per physician (UPIN), possible sources for this association include:
  - license number transcription errors in the Registry;
  - license numbers not updated when:
    - there are changes in the format of state license numbers and
    - new licenses issued after a license has lapsed.
  - practice settings not de-activated on a timely basis.
- The potential problem of UPINs being entered into the state license number field appears to be minor.
- Although the conformance of the format of state license numbers found in the 1996 Registry with the state licensing boards' specifications is high (above 95 percent) for some carriers, it is low for others.

Carrier-Issued PINs in the Registry

- Although the conformance of the format of carrier-issued PINs found in the 1994 Registry with the carriers' own specifications is high (above 95 percent) for some

carriers, it is low for others. It is not known whether this finding is due to poor adherence by carriers to their own specifications and/or mis-communication between carriers and HER.

Zip Codes on the Registry

- For no carrier were all of the Registry zip codes completely consistent with the rest of the address information maintained in the July 1996 Registry. For three carriers, the consistency rate (maximum) was only 22 percent. For all carriers, the average maximum consistency rate was 78 percent. Even excluding the carriers with the three lowest consistency rates, the average maximum consistency rate was only 88 percent.

- Address information was so poor on 23 percent of the records that it was impossible to determine if the Registry zip code, if present, was accurate.

Group Practice Indicator

- The PINs of group practice settings in the July 1996 Registry were compared to PINs in the 1995 Group Membership File. On average, only 61 percent of the Registry group PINs were found in the Group Membership File.

- PIN match rates ranged from 91 percent down to less than one percent (all four areas serviced by Pennsylvania BS). Only 11 carriers had match rates greater than 80 percent.

Claims UPINs and PINs

- UPINs found in the 1993 Physician Part B sample line items (fourth quarter only) were compared to the April 1994 Registry. UPINs for 99.77 percent of the line items were found in the Registry.

- Using information obtained during the carrier interviews, the *Interim Report's* analysis of the matching of claims' PINs to the Registry was replicated.

  - More than 35 percent of the distinct PINs found in NCH claims could not be found in the Registry for nine carriers. Between 10 and 20 percent of the distinct PINs found in NCH claims could not be found in the Registry for another five carriers. Algorithms could not be devised to find the claims' PINs in the Registry for another nine carriers.

  - Using carrier-provided information on the format of their PINs, it was possible to match PINs found in the claims for C & S Administrative Services

(Massachusetts) and Pennsylvania BS (Pennsylvania) whereas without the information, it would have been difficult to develop the matching algorithm.

- The PINs used on claims for some carriers such as California BS (Northern California) do not appear in the Registry. The reason in California BS's case is due to the fact that only *individual* PINs are used in the claims. For physicians that are only members of groups (i.e., they do not have a separate solo practice), their *group-member* PINs are present in the Registry, but not in the claims.

- Because some carriers use individual PINs on claims instead of full PIN maintained in the Registry, the use of PIN-matching algorithms could only *associate* claims' PINs with Registry PINs. In such circumstances, PINs in the claims file can not be directly matched, except fortuitously, to the Registry practice setting in which medical care was provided. Note that this problem should not arise for those physicians that do not belong to group practices. Nor do all carriers have such PIN systems.

Consistency of Data Elements Common to the Registry and NCH Claims

Because of the problems in matching claims' PINs directly to Registry practice settings, the consistency rates reported here should be interpreted as lower bound estimates.

- The claims' specialty code was equal to the Registry's specialty code for 94.1 percent of the line items.

- The last expense date was consistent with the Registry's DRIP status for 98.4 percent of the line items.

- The claims' zip code was equal to the Registry's zip code for 90.4 percent of the line items.

- About 81 percent of the line items had the same Medicare participation status as recorded on the Registry.

- The quality of the *practice type* data element on the claims was so poor that a comparison with its Registry counterpart had to be abandoned.

3.3.2 Discussion

Several of the key findings have significant implication for operations. The inability to find in the Registry nearly all of the PINs that appear on claims gives the appearance that

physician payments are inaccurate. This impression, however, might not be actually indicative of a real physician payment problem. For instance, the system used by California BS and, presumably, by other carriers seems to rely on one or more internal PINs that serve to link individual physicians to group practices. And, at least in the California BS case, there also may be internal PINs for physicians that practice only in solo environments. The integrity of such systems, however, can not be ascertained with the information currently available. As will be further described in Chapter 5, such systems can be quite complex.

A large number of problems were found with the state license numbers as recorded in the Registry. It is quite evident that there are a significant number of transcription errors in the license numbers. The conformance of the format of the license numbers on the Registry to the format specified by state licensing boards is also not sufficiently high. For some situations such as Utah, it might be necessary for the local carrier to obtain the correct license number formats on a historical basis and then update their records accordingly. As long as states use different license number formats, it will never be possible to uniquely identify physicians using state license numbers. The more modest goal of using state license numbers to identify non-Medicare claims does not appear to be feasible at this time.

Unless there are more up-to-date versions of the Group File and the Group Membership File available than was used in this study, it appears that these files may not be complete. It also appears, in the case of Pennsylvania BS, that the carrier is not using its standard Registry PIN for physicians in group practices in the Group Membership File. HCFA may want to conduct further analyses on these files to ascertain whether these conjectures are correct.

The inability to find in the Registry nearly all of the PINs that appear on claims also makes it difficult for researchers to study changes in the organization of medical practice. The importance of belonging or being affiliated with a group practice can not ascertained without reliable identifiers to link claims to specific practice settings in the Registry, the Group File, and the Group Membership File.

Comparisons of data elements common to both the Registry and NCH claims data revealed some large discrepancies. In particular, Medicare participation status on the claims data was the same as on the Registry for only 81 percent of the line items. Since Medicare payments are affected by participation status, such discrepancies might be indicative of over- or under-payment to physicians. Since Medicare participation status is often renewed during the fourth quarter of each year, this might account for the low consistency rate. If so, then

many physicians must have changed their participation status during the fourth quarter of 1993. If this conjecture is correct, then it is important to understand why so many physicians changed their participation status.

A portion of the discrepancies that were found are due to problems in matching claims' PINs directly to Registry practice settings. This problem undermines the ability of HCFA to use the Registry to validate information on Medicare claims. The continued use of individual identifiers instead of practice setting-specific identifiers on Medicare claims by some carriers indicates that they did not fully understand the purpose of the Registry and UPINs. To help rectify this and other problems, BPO implemented the forthcoming NPI. It is BPO's intent that the intelligence built into the NPI will overcome problems in matching claims to the practice settings in which medical care was provided.

A portion of the discrepancies between the Registry and claims data is due to the fact that, for some carriers, two different files are the sources for the data elements. Discrepancies between these two carrier-maintained files can give rise to discrepancies between Registry and claims data. The practice of maintaining two separate files of similar data represents expensive duplication of effort. This practice also reduces the effectiveness of using the Registry to validate physician information on Medicare claims.

4.0 REGISTRY AND CLAIMS ACTIVITY ANALYSES

The previous chapter and the preliminary analyses presented in the *Interim Report* uncovered the presence of flawed data in the Registry and discrepancies between claims data and Registry data. These results and those from a previous study[1] suggest problems in the maintenance of data sent to the Registry. In particular, the carrier interviews revealed several potential sources for the presence of erroneous data in provider files and, hence, the Registry. For instance, double-entry of data often is not performed, thus allowing for the presence of transcription errors in provider files. In this chapter, two other potential sources of problems are investigated. The possible impact of the workload size, that is, the total number of changes made to the provider file, on frequency of flawed data in the Registry is examined. The potential contribution of *de facto* inactive physicians to provider file maintenance problems is also investigated. Note that HCFA also wanted to understand carrier updating practices, and whether too-little updating activity would explain some of the problems such as large numbers of *de facto* inactive physicians.

4.1 Registry Activity Analysis

Changes to practice settings maintained in the Registry between January 1994 and January 1995 are documented in this section. Five quarterly Registry files were used to perform the analyses (January 1994, April 1994, July 1994, October 1994, and January 1995). The number of practice settings changed, the number of data elements changed, and the number of changes for each carrier-provided data element were tabulated. Analyses were separately performed on all practice settings, those practice settings that were active in all five Registry files,[2] and, in some cases, those practice settings newly added to the Registry during 1994 and those practice settings de-activated during 1994. All analyses were performed by carrier.

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[1]Health Economics Research, Inc. *Unique Physician Identification Number (UPIN) Validation Studies, Carrier Analysis* (August 1994) and *Final Report* (February 1995). Prepared under HCFA Master Contract No. 500-92-0020.

[2]Each practice setting has a DRIP (Deactivate, Resident, Intern, in Practice) indicator. A DRIP value of R, I, or P represents a *active* practice setting.

4.1.1 Methodology

The basic unit of analysis is the practice setting. For each carrier, a unique practice setting is defined by a UPIN/PIN combination. Changes to each practice setting were then tabulated. Given the definition of a unique practice setting, there are, however, some problems in tabulating changes:

- For each carrier in each Registry file there should be, in principle, only one UPIN/PIN combination. During the early history of the Registry, several carriers (most notably Pennsylvania BS), had several multiple cases of a given UPIN/PIN combination. Upon discovering this practice, the contractor maintaining the Registry, Transamerica Occidental Life Insurance Company (TOLIC), instructed carriers to discontinue it. These early cases of multiple practice settings with the same UPIN/PIN still remain on the Registry. For the analyses presented in this chapter, only the most recently added practice setting of such cases in each quarterly Registry file was used. This method of handling multiple UPIN/PIN combinations should not affect the tabulations nor the consistency of the tabulations presented.

- During the analysis period, some carriers apparently changed their PIN systems. This presumably accounts for the low number of practice settings for Michigan BC/BS, Montana BC/BS, and Utah BC/BS that were active in all five quarterly Registry files. In Montana's case, for instance, it appears that a change to their PIN format was made after January 1994. Specifically, in the January 1994 file, the carrier number was appended, as a suffix, to the PIN. In subsequent files, the carrier number was removed from the PIN. Consequently, there are only a few practice settings, as defined for this analysis, for these carriers that were active in all five Registry files. Something similar may have happened for Empire BC/BS.[3] The tabulations for these four carriers, thus, should be cautiously interpreted. Although other carriers might have had the same problem, it was not immediately apparent.

- When updating existing practice settings on the Registry, new practice settings are sometimes inadvertently created. Unlike de-activated practice settings that remain in the Registry, these inadvertently-created practice settings are deleted from subsequent Registry files. (Because of the problem described above for Montana, such cases can not readily be detected.) Such practice settings are included, for some tables, in the tabulation of total practice settings. Thus, the total number of practice settings used as a denominator in some calculations slightly exceeds the total number of

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[3]Since this problem was discovered too late in the production process, we did not attempt to use the *old PIN* data element to link practice settings - a cursory examination of the *old PINs* indicated that they would not have helped in the Montana situation. During 1994, apparently, the carrier contract for Michigan was assumed by Health Care Service Corporation, a subsidiary of Illinois BC/BS.

practice settings present in the January 1995 Registry file. The count magnitudes and some percentages are minimally affected by this problem. Inadvertent additions also affect counts of practice settings added. In some tables, the additions are extremely large, apparently because this problem was severe for some carriers.

For some analyses, the practice setting is the unit of analysis. In other analyses, each quarterly record (except for January 1994 Registry records) for a practice setting is the unit of analysis. Four methods were used in counting changes (A, B, C, and D); they are illustrated in Exhibit 4-1. Consider, for example, practice setting #4 in Exhibit 4-1. The number of data elements that changed was one (method B), the total number of all changes was two (method A), there were changes between two sets of quarterly records leading to a count of two changes (method C), and because there was at least one change to a practice setting data element, the number of practice settings with a change is one (method D). Variations in the unit of analysis and in counting methods will be noted.

The measures of Registry activity are based on comparisons of five quarterly files. Each of these files represents one point in time. As such, multiple changes to a data element between any two quarterly files are not captured in the tabulations. Therefore the tabulations may understate somewhat the total number of changes to the Registry.

4.1.2 Baseline Counts of Registry Practice Settings

Before presenting the detailed analyses of Registry activity, a few gross changes are noted.[4] The number of total practice setting records in the Registry increased from 2.1 million in January 1994 to 2.4 million in January 1995, an increase of 10.3 percent (Table 4-1).[5] Empire BC/BS had the highest percentage increase in total practice settings with 21.2 percent. Two other carriers, Wisconsin Physician Service and California BS, had increases exceeding 18 percent. Aside from the two RRB carriers and the two areas serviced by SSS, three of

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[4]Changes in the number of distinct UPINs are not discussed for the following reasons. If the "Distinct UPIN" columns were summed, the resulting value would significantly exceed the actual number of distinct UPINs issued by the Registry. The reason is that some physicians practice in more than one state and because the Railroad Retirement Board (RRB) carriers service physicians in all states.

[5]The total number of practice settings includes settings that have invalid DRIP values. Therefore the sum of the "active" and "deactivated" columns differs from the total for 14 carriers in 1994 and 16 carriers in 1995. Kentucky BC/BS, California BS, and Equicor (Idaho) have the overwhelming majority of the invalid DRIP values. See the *Carrier Analysis*, Chapter 3 for details.

EXHIBIT 4-1

COUNTING METHODS ILLUSTRATED

Counting Method	Description	Maximum Possible in this Example	Number of Changes Tabulated for Practice Setting Number: 1	2	3	4	5	6
A	Each time a data element changes, a change is tabulated	12	6	8	2	2	1	0
B	The number of data elements that change, regardless of the number of times that any individual data element changes	3	3	2	2	1	1	0
C	Number of times there is any change between quarterly records, regardless of the number of data elements that change between any pair of quarterly records	4	3	4	1	2	1	0
D	Whether there was any change between quarterly records for a practice setting	1	1	1	1	1	1	0

Examples:

Practice Setting	January 1994			April 1994			July 1994			October 1994			January 1995		
	GY	CR	SP	GY	CR	SP	GY	CR	SP	GY	CR	SP	GY	CR	SP
1	99	MD	08	89	MD	08	89	DO	09	79	MD	06	79	MD	06
2	67	MD	08	67	DO	12	67	MD	01	67	DO	09	67	MD	20
3	55	MD	08	55	DO	12	55	DO	12	55	DO	12	55	DO	12
4	66	MD	01	66	MD	01	66	MD	08	66	MD	08	66	MD	11
5	98	MD	05	98	MD	05	98	MD	05	89	MD	05	89	MD	05
6	75	MD	11	75	MD	11	75	MD	11	75	MD	11	75	MD	11

Abbreviations: GY - graduation year; CR - credential; SP - specialty.

TABLE 4-1

BASELINE STATISTICS: COUNTS OF DISINCT UPINs & PRACTICE SETTINGS BY CARRIER

		STATUS JANUARY 1994				STATUS JANUARY 1995			
			Number of Practice Settings				Number of Practice Settings		
Number	Carrier	Distinct UPINs	Total	Active	Deactivated	Distinct UPINs	Total	Active	Deactivated
00510	Alabama BC/BS	11,545	30,441	19,254	11,183	12,386	33,651	19,118	14,532
00520	Arkansas BC/BS, AR	6,733	16,906	12,719	4,184	7,129	18,824	12,702	6,119
00528	Arkansas BC/BS, LA	11,437	32,298	25,277	7,019	12,270	36,855	27,100	9,755
00542	California BS	67,318	170,341	113,074	56,961	69,459	201,389	141,156	60,084
00624	Colorado BC/BS	10,765	17,545	13,164	4,379	11,408	19,307	13,714	5,591
00570	Pennsylvania BS, DE	1,998	3,675	3,228	447	2,129	3,673	3,409	464
00580	Pennsylvania BS, DC	12,110	20,847	18,380	2,467	12,684	21,786	19,241	2,545
00590	Florida BC/BS	42,975	111,481	89,759	21,722	45,397	123,558	92,760	30,798
00621	Illinois BC/BS	34,503	75,540	59,923	15,617	36,156	82,298	65,823	16,475
00630	Indiana BC/BS	14,694	30,781	27,761	3,020	15,739	34,655	30,806	3,849
00640	Iowa BS	9,912	18,732	12,123	6,609	10,510	20,655	11,904	8,751
00650	Kansas BS, KS	5,430	10,413	7,956	2,457	5,731	11,347	7,886	3,451
00655	Kansas BS, NE	4,044	8,119	6,402	1,715	4,312	9,176	6,427	2,747
00660	Kentucky BC/BS	10,391	22,765	20,097	1,501	11,079	25,014	22,718	1,924
00901	Maryland Blue Shield	13,385	27,565	17,831	9,734	14,211	30,794	20,859	9,935
00700	C&S Administrative Services, MA	30,413	65,122	57,931	7,182	31,655	69,330	61,371	7,950
00623	Michigan BC/BS	27,807	69,940	56,329	13,611	28,980	76,851	55,471	21,380
00720	Minnesota BC/BS	5,929	15,804	12,786	3,016	6,373	17,298	12,140	5,157
00740	Kansas BS, MO	5,857	12,498	9,628	2,790	6,194	13,779	9,826	3,936
00751	Montana BC/BS	2,571	3,955	2,975	979	2,730	4,326	2,905	1,420
00780	C&S Administrative Services, NH	3,729	7,038	6,544	495	3,879	7,526	7,014	513
00781	C&S Administrative Services, VT	2,551	4,831	4,281	550	2,649	5,111	4,450	661
00801	Blue Shield of Western New York	17,264	30,271	22,169	8,102	18,237	33,335	22,605	10,730
00803	Empire BC/BS, NY	49,891	94,932	94,927	5	52,272	115,066	114,937	129
00820	North Dakota BC/BS, ND-SD	4,281	7,817	4,894	2,923	4,592	8,602	4,995	3,607
00825	North Dakota BC/BS, WY	1,411	2,467	1,537	930	1,537	2,722	1,411	1,311
00860	Pennsylvania BS, NJ	23,438	35,657	29,431	6,226	24,573	37,238	30,835	6,403
00865	Pennsylvania BS, PA	46,380	86,186	74,829	11,357	48,304	89,405	77,526	11,879
00870	Rhode Island Blue Shield	3,816	6,224	5,337	887	4,059	7,014	5,414	1,600
00880	South Carolina BC/BS	9,717	24,930	22,039	2,887	10,308	26,685	17,235	9,447
00900	Texas BC/BS	46,006	103,066	62,972	40,094	48,734	115,851	65,926	49,925
00910	Utah BC/BS	4,325	6,768	5,536	1,232	4,659	7,520	6,285	1,235
00951	Wisconsin Physician Service	15,519	26,276	22,474	3,802	16,334	31,095	20,923	10,172
00973	S.S.S., PR	7,151	11,156	10,955	201	7,307	11,535	11,332	203
00974	S.S.S., VI	8	8	8	0	8	8	8	0
01020	Aetna Life and Casualty, AK	1,579	2,577	1,987	591	1,744	2,910	1,890	1,021
01030	Aetna Life and Casualty, AZ	11,117	21,988	16,235	5,753	11,955	25,816	17,675	8,141
01040	Aetna Life and Casualty, GA	16,382	29,903	27,318	2,585	17,595	33,719	30,307	3,412
01120	Aetna Life and Casualty, HI	3,787	6,457	5,260	1,197	4,157	7,296	5,929	1,367
01290	Aetna Life and Casualty, NV	3,214	6,508	4,529	1,979	3,504	7,344	4,669	2,675
01360	Aetna Life and Casualty, NM	4,445	7,734	6,762	972	4,751	8,430	7,085	1,345
01370	Aetna Life and Casualty, OK	8,209	13,886	12,516	1,370	8,640	15,152	12,897	2,255
01380	Aetna Life and Casualty, OR	9,259	18,650	14,544	4,106	9,854	20,694	14,003	6,691
01390	Washington Physician Service	15,237	25,287	19,573	5,714	16,036	28,221	23,642	4,579
02050	Transamerica Occidental	49,603	124,314	106,486	17,800	51,593	138,092	116,412	21,672
05130	Equicor Life Assurance, ID	2,582	4,526	3,353	922	2,701	4,852	3,495	1,165
05440	Equicor Life Assurance, TN	14,319	28,111	27,920	191	15,133	30,949	30,744	205
05535	Prudential, NC	19,620	42,060	38,757	3,302	20,766	45,260	40,692	4,567
10072	Railroad Retirement Board	176,699	222,321	218,405	3,916	179,265	226,787	222,606	4,181
10074	Railroad Retirement Board	132,522	157,596	154,005	3,591	141,368	171,433	166,790	4,643
10230	Travelers Insurance Co., CT	12,093	18,602	14,892	3,710	12,710	20,682	14,572	6,110
10240	Travelers Insurance Co., MN	10,502	16,325	12,333	3,992	11,329	18,595	12,133	6,462
10250	Travelers Insurance Co., MS	5,300	11,808	8,112	3,696	5,696	12,914	7,692	5,222
10490	Travelers Insurance Co., VA	13,463	23,349	17,376	5,973	14,895	27,466	18,649	8,817
11260	Missouri General Am., MO	12,503	24,959	18,205	6,754	13,349	28,531	17,949	10,582
14330	Group Health Insurance, NY	7,226	10,045	8,663	1,382	7,793	11,226	9,549	1,677
16360	Nationwide Insurance Co., OH	32,794	89,411	68,685	20,726	34,521	97,565	67,800	29,765
16510	Nationwide Insurance, WV	6,129	15,864	12,190	3,674	6,499	16,879	11,738	5,141
21200	C&S Administrative Serv.,ME	4,291	6,937	6,315	622	4,499	7,515	6,840	675
	TOTAL		2,141,613	1,778,953	360,802		2,361,807	1,894,000	467,048

NOTE: Since many physicians are serviced by more than one carrier, the sum of the "Distinct UPINs" columns would result in counts significantly higher than the actual number of distinct UPINs on the Registry.

SOURCE: Health Economics Research, Inc. tabulations of January 1994 and January 1995 Physician Registry files

Pennsylvania BS's services areas (DC, New Jersey, and Pennsylvania) had the smallest increases with less than five percent each.

The number of active practice settings increased from 1.8 million in January 1994 to 1.9 million in January 1995, an increase of 6.5 percent. The three highest percentage increases in the number of active practice settings were for California BS at 24.8 percent, Empire BC/BS at 21.1 percent, and Washington Physician Service at 20.8 percent.[6] Several carriers had fewer active practice settings in January 1995 than in January 1994. The largest decrease by far was for South Carolina BC/BS with a 21.8 percent decrease. South Carolina's carrier deactivated a large number of records in 1994, apparently as part of an effort to correct the state's file.

The number of de-activated practice settings increased from 360,802 in January 1994 to 467,048 in January 1995, an increase of 29.4 percent. The number of de-activated practice settings for Empire BC/BS increased from five in January 1994 to 129 in January 1995, an increase of 2,480 percent! For a carrier with as many practice settings as Empire has, the number of de-activated settings in both years is implausibly low. South Carolina BC/BS had the next highest percentage increase in de-activated practice settings at 227 percent, presumably related to the decrease in active practice settings. Eleven other carriers had percentage increases greater than 50 percent in the number of de-activated settings. The number of de-activated practice settings actually declined for the state of Washington, presumably as a result of a review by Aetna of the previous carrier's (Washington Physician Service) provider file.

The changes in the number of practices described thus far only provide a partial picture of the total number of changes that carriers make to their provider files. In the sections that follow, the picture is made more comprehensive.

4.1.3 Changes to Practice Settings

The number of practice settings added to the Registry, de-activated, and re-activated are presented in Table 4-2 in the first three columns after the carrier name. Other changes, counted only once (counting method D), are tabulated in the fourth column. Included in the fourth column are changes to data elements such as date of birth and credentials. Note that for a

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[6]The carrier contract the state of Washington was taken over by Aetna Life Insurance Company at the beginning of 1994. See Appendix C for alternative names for some of the carriers listed in Table 4-1.

TABLE 4-2

CHANGES TO PRACTICE SETTINGS

		PRACTICE SETTING CHANGES BETWEEN 1/1/94 & 1/1/95						
Number	Carrier	Number Added	Number Deactivated	Number Reactivated	Number with Other Changes	Percent of Practice Settings with Changes (1/1/95)	Mean Number of Changes Per Practice Setting Changed	Mean Number of Data Elements Changed Per Practice Setting Changed
00510	Alabama BC/BS	3,217	3,388	124	17,043	54.3 %	1.34	1.94
00520	Arkansas BC/BS, AR	1,945	2,087	162	11,043	63.3	1.09	1.98
00528	Arkansas BC/BS, LA	4,735	3,272	529	16,543	48.1	1.06	1.88
00542	California BS	31,097	5,487	2,572	17,336	10.0	1.07	1.95
00824	Colorado BC/BS	1,770	1,188	115	13,769	72.1	1.06	2.06
00570	Pennsylvania BS, DE	199	22	5	3,416	88.2	1.10	2.98
00580	Pennsylvania BS, DC	951	103	28	19,198	88.1	1.08	3.01
00590	Florida BC/BS	12,150	9,993	1,048	69,620	59.2	1.31	2.33
00621	Illinois BC/BS	7,219	992	169	55,276	67.0	1.04	2.97
00630	Indiana BC/BS	3,900	818	15	21,673	63.0	1.21	2.28
00640	Iowa BS	1,955	2,226	113	17,122	83.8	1.05	1.75
00650	Kansas BS, KS	972	998	21	7,437	67.9	1.03	2.87
00655	Kansas BS, NE	1,077	1,037	24	6,426	73.4	1.06	2.74
00660	Kentucky BC/BS	2,263	426	19	16,458	66.2	1.02	2.22
00901	Maryland Blue Shield	3,262	361	143	17,350	57.2	1.02	2.19
00700	C&S Administrative Services, MA	4,238	959	208	23,198	33.8	1.00	2.64
00623	Michigan BC/BS	77,330	1,931	498	121,849	82.8	1.03	12.90
00720	Minnesota BC/BS	1,654	2,191	65	13,643	79.0	1.01	2.42
00740	Kansas BS, MO	1,310	1,189	52	7,665	56.7	1.06	2.79
00751	Montana BC/BS	4,315	349	34	6,588	80.2	1.04	14.22
00780	C&S Administrative Services, NH	492	46	34	3,064	40.9	1.00	2.53
00781	C&S Administrative Services, VT	282	120	14	1,801	36.0	1.00	2.66
00801	Blue Shield of Western New York	3,078	2,656	66	20,966	63.5	1.01	2.58
00803	Empire BC/BS, NY	58,846	120	2	44,760	29.1	1.01	18.25
00820	North Dakota BC/BS, ND-SD	795	905	256	5,489	66.0	1.05	2.63
00825	North Dakota BC/BS, WY	255	405	27	1,956	73.6	1.03	1.73
00860	Pennsylvania BS, NJ	1,590	207	36	29,714	79.8	1.07	2.54
00865	Pennsylvania BS, PA	3,255	633	114	80,927	90.5	1.08	2.82
00870	Rhode Island Blue Shield	796	683	19	1,746	30.1	1.01	1.96
00880	South Carolina BC/BS	2,499	6,489	30	10,782	39.6	1.03	5.42
00900	Texas BC/BS	13,037	10,435	541	33,367	32.0 %	1.13	2.25
00910	Utah BC/BS	5,829	3	0	5,092	40.4	1.00	22.06

TABLE 4-2 (continued)

CHANGES TO PRACTICE SETTINGS

Number	Carrier	PRACTICE SETTING CHANGES BETWEEN 1/1/94 & 1/1/95 Number Added	Number Deactivated	Number Reactivated	Number with Other Changes	Percent of Practice Settings with Changes (1/1/95)	Mean Number of Changes Per Practice Setting Changed	Mean Number of Data Elements Changed Per Practice Setting Changed
00951	Wisconsin Physician Service	4,993	6,354	65	15,959	56.3	1.03	2.80
00973	S.S.S., PR	381	3	1	7,831	67.9	1.11	2.23
00974	S.S.S., VI	0	0	0	1	12.5	1.00	5.00
01020	Aetna Life and Casualty, AK	336	424	20	1,669	58.3	1.03	2.79
01030	Aetna Life and Casualty, AZ	3,841	2,485	132	9,595	39.5	1.04	2.65
01040	Aetna Life and Casualty, GA	3,846	852	54	11,779	35.4	1.02	2.35
01120	Aetna Life and Casualty, HI	839	172	2	4,085	56.1	1.00	2.44
01290	Aetna Life and Casualty, NV	841	731	50	3,218	46.4	1.03	2.31
01360	Aetna Life and Casualty, NM	701	391	21	3,454	42.8	1.08	2.81
01370	Aetna Life and Casualty, OK	1,316	910	28	9,290	62.5	1.09	2.71
01380	Aetna Life and Casualty, OR	2,075	2,541	87	10,876	52.7	1.06	3.05
01390	Washington Physician Service	2,956	1,444	2,596	19,587	70.7	1.02	3.27
02050	Transamerica Occidental	13,817	4,554	926	94,325	68.6	1.26	2.45
05130	Equicor Life Assurance, ID	328	245	12	2,286	48.0	1.17	2.21
05440	Equicor Life Assurance, TN	2,843	12	3	14,080	45.5	1.05	1.91
05535	Prudential, NC	3,204	1,260	2	18,340	41.0	1.07	1.89
10072	Railroad Retirement Board	4,666	196	15	3,417	1.6	1.04	3.02
10074	Railroad Retirement Board	14,171	1,011	259	5,490	3.6	1.03	3.05
10230	Travelers Insurance Co., CT	2,090	2,384	126	9,024	48.9	1.05	2.38
10240	Travelers Insurance Co., MN	2,282	2,645	230	6,589	44.6	1.06	1.51
10250	Travelers Insurance Co., MS	1,117	1,602	94	4,223	41.2	1.05	1.70
10490	Travelers Insurance Co., VA	4,135	2,133	122	5,240	24.1	1.04	1.80
11260	Missouri General Am. , MO	3,943	4,425	710	20,311	74.4	1.12	4.12
14330	Group Health Insurance, NY	1,183	316	24	4,841	43.5	1.02	2.98
16360	Nationwide Insurance Co., OH	8,756	9,209	228	33,145	38.9	1.02	2.20
16510	Nationwide Insurance, WV	1,065	1,513	64	4,448	31.8	1.02	2.01
21200	C&S Administrative Serv.,ME	583	60	10	3,364	44.8	1.00	2.59
	Total	342,621	109,591	12,964	1,048,784	43.6		

NOTE: 1. See text for column definitions.
2. The "Number Added" column includes transient records.

SOURCE: Health Economics Research, Inc. tabulations of January 1994, April 1994, July 1994, October 1994 and January 1995 Physician Registry files.

practice setting that first has a change to a data element such as credentials and then once to the DRIP status (e.g., de-activation), one change would be counted in both the fourth and second columns. The numerator for calculating the percentage of practices settings with any change by January 1995 (fifth column), is the sum of the fourth column and those practices settings de-activated (second column) and re-activated (third column) that did *not* have any change to any other data element. The denominator is the total number (unduplicated) of practice settings found for each carrier over the five quarterly files. It is usually slightly greater than the total number of practice settings for each carrier in the January 1995 Registry (see the third bulleted item in the methodology section), except for the four carriers discussed in the second bulleted item in the methodology section. The sixth column shows, for those practice settings that had any change (other than deactivation or reactivation), the mean number of times a practice setting had any change (method C). The last column shows, for those practice settings that had any change (other than deactivation or reactivation), the mean number of data elements that changed at least once during 1994 (method B).

The carriers with the largest number of practice settings added during 1994 were California BS with 31,097, Michigan BC/BS with 77,330, and Empire BC/BS with 58,846 (Table 4-2). Since California BS is one of the largest carriers, its inclusion among the carriers with the most new practice settings is not surprising. The values for Michigan may reflect the change in the carrier contract, and Empire's is surprisingly large. As can be seen in Table 4-1, additions for these two carriers do not represent net gains to the total number of practice settings, probably because many may have been transient records. The carriers with the most practice settings de-activated during 1994, with more than 9,000 each, were Florida BC/BS, Texas BC/BS, and Nationwide Insurance (Ohio). The carriers with the most practice settings re-activated during 1994, with more than 1,000 each, were California BS, Florida BC/BS, and after a presumed review of Washington Physician Service's provider file, Aetna. The carriers with the most other changes to practice settings during 1994 were Michigan BC/BS with 121,849, TOLIC[7] with 94,325, Pennsylvania BS (Pennsylvania) with 80,927, and Florida BC/BS with 69,620. These last three carriers are among the largest in the country. As previously noted, the results for Michigan need to be cautiously interpreted.

[7]In addition to its duties as the Registry contractor, TOLIC is the carrier for southern California.

Nearly 44 percent of practice settings nationally, had at least one change during 1994 (column 5), a very high rate when the low rates for such large carriers as the two RRB carriers and California BS are considered. More than 80 percent of the practice settings for six carriers had at least one change during 1994. These included three of Pennsylvania BS's areas (DC, Delaware, and Pennsylvania), Iowa BS, Michigan, and Montana BC/BS. Michigan's percentage is very high considering the apparent overcount of their practice setting as is Montana's with its new PIN format not included in its counts. The low rate of changes for the two RRB carriers probably reflects the low claims activity of most physicians with these carriers. Many physicians submitting claims to the RRB carriers have little financial incentive to inform the RRB carriers of practice changes due to low volume.

Alabama BC/BS had highest average number of changes for practice settings that changed: a mean of 1.34 changes out of a possible maximum of 4 (column six). The next two highest were Florida BC/BS with 1.31 and TOLIC with 1.26. Several carriers had means of one: that is, on average, there was only one observed change.

The mean number of data elements that changed for practice settings that had any changes exceeded 12 for Utah BC/BS, Empire BC/BS, Montana BC/BS, and Michigan BC/BS. Once again, these values might not be truly accurate. The next highest values, ignoring SSS (VI), were South Carolina BC/BS with a mean of 5.42 data elements and Missouri General American with a mean of 4.12 data elements that changed at least once during 1994 for each practice setting that had any changes.

Nearly 1.6 million practice settings were active in all five quarterly Registry files (Table 4-3). (Because of the unrealistically low values for Michigan BC/BS, Montana BC/BS, and Utah BC/BS, the 1.6 million figure is an undercount of, perhaps, 80 to 100 thousand.) On average, 43.7 percent of all practice settings active throughout 1994 had at least one change (method D) but there was a lot of variation. For 13 carriers, more than 80 percent of their practice settings active throughout 1994 had at least one change. Most of these 13 carriers had at least two data elements (method B), on average, that changed for each practice setting that had any changes. Such high rates of change might explain why high rates of discrepancies exist between the Registry and NCH claims data.

Alabama BC/BS had the highest mean number of record changes across quarters, among all records that changed (method C): a mean of 1.43 changes out of a possible maximum of 4 (column 5). Florida BC/BS had the next highest value at 1.35, followed by

TABLE 4-3

ACTIVITY ON PRACTICE SETTINGS THAT WERE ACTIVE THROUGH-OUT 1994/5

			PRACTICE SETTING WITH ANY CHANGE			FOR PRACTICE SETTINGS THAT HAD AT LEAST ONE CHANGE	
Number	Carrier	Number of Practice Settings	Number	Percent	Mean Changes Per Practice Setting	Mean Number of Record Changes	Mean Number of Data Elements Changed
00510	Alabama BC/BS	15,933	12,089	75.9 %	1.08	1.43	1.91
00520	Arkansas BC/BS, AR	10,670	6,560	61.5	0.66	1.07	2.00
00528	Arkansas BC/BS, LA	22,011	11,092	50.4	0.53	1.06	1.47
00542	California BS	107,714	10,765	10.0	0.11	1.10	1.68
00824	Colorado BC/BS	12,018	10,144	84.4	0.89	1.05	2.06
00570	Pennsylvania BS, DE	3,205	3,047	95.1	1.05	1.10	2.98
00580	Pennsylvania BS, DC	18,272	17,507	95.8	1.03	1.08	2.99
00590	Florida BC/BS	80,239	57,244	71.3	0.96	1.35	2.34
00621	Illinois BC/BS	58,591	49,447	84.4	0.88	1.04	2.90
00630	Indiana BC/BS	26,993	18,374	68.1	0.84	1.24	2.39
00640	Iowa BS	9,912	8,682	87.6	0.93	1.06	1.61
00650	Kansas BS, KS	6,948	6,038	86.9	0.89	1.03	2.89
00655	Kansas BS, NE	5,381	4,905	91.2	0.97	1.06	2.89
00660	Kentucky BC/BS	19,672	13,692	69.6	0.71	1.02	2.19
00901	Maryland Blue Shield	17,468	16,191	92.7	0.95	1.02	2.17
00700	C&S Administrative Services, MA	56,965	22,050	38.7	0.39	1.00	2.58
00623	Michigan BC/BS	1,516	174	11.5	0.12	1.05	2.45
00720	Minnesota BC/BS	10,472	8,551	81.7	0.82	1.00	2.09
00740	Kansas BS, MO	8,436	5,605	66.4	0.70	1.06	2.63
00751	Montana BC/BS	9	4	44.4	0.44	1.00	1.25
00780	C&S Administrative Services, NH	6,496	2,984	45.9	0.46	1.00	2.50
00781	C&S Administrative Services, VT	4,163	1,691	40.6	0.41	1.00	2.63
00801	Blue Shield of Western New York	19,538	16,721	85.6	0.86	1.01	2.57
00803	Empire BC/BS, NY	56,106	3,671	6.5	0.07	1.02	2.61
00820	North Dakota BC/BS, ND-SD	4,041	2,853	70.6	0.75	1.06	2.56
00825	North Dakota BC/BS, WY	1,145	876	76.5	0.79	1.03	1.49
00860	Pennsylvania BS, NJ	29,225	27,702	94.8	1.01	1.07	2.53
00865	Pennsylvania BS, PA	74,175	70,577	95.1	1.04	1.09	2.78
00870	Rhode Island Blue Shield	4,676	1,215	26.0	0.26	1.01	1.87
00880	South Carolina BC/BS	14,984	1,934	12.9	0.13	1.02	1.47
00900	Texas BC/BS	52,756	19,394	36.8	0.43	1.17	2.06
00910	Utah BC/BS	1,622	9	0.6	0.01	1.00	1.22
00951	Wisconsin Physician Service	16,330	10,463	64.1	0.66	1.03	2.55
00973	S.S.S., PR	10,950	7,759	70.9	0.78	1.11	2.22
00974	S.S.S., VI	8	1	12.5	0.13	1.00	5.00
01020	Aetna Life and Casualty, AK	1,578	1,180	74.8	0.77	1.02	2.35
01030	Aetna Life and Casualty, AZ	13,892	6,723	48.4	0.51	1.05	2.59
01040	Aetna Life and Casualty, GA	26,496	10,122	38.2	0.39	1.02	2.29
01120	Aetna Life and Casualty, HI	5,090	3,785	74.4	0.75	1.00	2.43
01290	Aetna Life and Casualty, NV	3,842	2,459	64.0	0.66	1.04	2.17
01360	Aetna Life and Casualty, NM	6,372	3,101	48.7	0.53	1.08	2.71
01370	Aetna Life and Casualty, OK	11,565	8,186	70.8	0.78	1.09	2.57
01380	Aetna Life and Casualty, OR	12,031	7,856	65.3	0.69	1.06	2.49
01390	Washington Physician Service	18,169	15,181	83.6	0.85	1.02	3.23
02050	Transamerica Occidental	102,053	77,270	75.7	0.96	1.27	2.50
05130	Equicor Life Assurance, ID	3,116	1,729	55.5	0.66	1.19	2.16
05440	Equicor Life Assurance, TN	27,904	12,628	45.3	0.48	1.05	1.93
05535	Prudential, NC	37,508	15,225	40.6	0.44	1.07	1.93
10072	Railroad Retirement Board	218,027	3,081	1.4	0.01	1.05	1.98
10074	Railroad Retirement Board	152,735	4,270	2.8	0.03	1.03	1.99
10230	Travelers Insurance Co., CT	12,551	6,416	51.1	0.54	1.05	2.44
10240	Travelers Insurance Co., MN	9,772	4,250	43.5	0.45	1.04	1.46
10250	Travelers Insurance Co., MS	6,536	2,987	45.7	0.48	1.04	1.77
10490	Travelers Insurance Co., VA	15,359	3,646	23.7	0.25	1.03	1.73
11260	Missouri General Am., MO	13,763	13,456	97.8	1.11	1.14	3.96
14330	Group Health Insurance, NY	8,349	3,997	47.9	0.48	1.01	3.10
16360	Nationwide Insurance Co., OH	59,182	23,103	39.0	0.40	1.02	1.86
16510	Nationwide Insurance, WV	10,646	3,210	30.2	0.31	1.02	1.85
21200	C&S Administrative Serv., ME	6,251	3,258	52.1	0.52	1.00	2.55
	Total	1,571,427	687,130	43.7			

SOURCE: Health Economics Research, Inc. tabulations of January 1994, April 1994, July 1994, October 1994 and January 1995 Physician Registry files.

TOLIC at 1.27. Most of the other carriers' records averaged only about one change. Aside from SSS (VI), the carrier that had the highest mean number of data elements (method B) that changed during 1994, for practice settings that were active throughout 1994, was Missouri General American with a mean of 3.96 data elements. Two other carriers had means greater than three: Washington Physician Service (Aetna) and Group Health Insurance (New York).

There were nearly 312,000 practice settings newly added during 1994 that remained active throughout the rest of the analysis period (Table 4-4).[8] On average, 37 percent of the 312,000 practice settings had at least one subsequent change to the practice setting information (method D). Again, there was considerable variation in the percent. Aside from Michigan's extremely high value of 93.5 percent,[9] over 70 percent of the newly added practice settings had a least one change for five other carriers: Alabama BC/BS, Kansas BS (Nebraska), Montana BC/BS, TOLIC, and Missouri General American. For the one RRB carrier with an average of 6.78 data elements changed (method B) (for each practice setting that had any change), the base only 18 records. South Carolina BC/BS, Utah BC/BS, and Missouri General American had averages exceeding 4 data elements that changed per practice setting, but Utah only had a base of 2 records. We also expected a lower change rate for these settings than for fully active ones, but instead it was much higher.

The number of practice settings de-activated during 1994 was 103,874 (Table 4-5).[10] During 1994, some of the carriers (e.g., Florida BC/BS) seem finally to have gotten around to de-activating practice settings that should have been de-activated in prior years. Even if some of the carriers were "catching up" in de-activating practice settings, the number of practice settings de-activated during 1994 seems low for several carriers such as Pennsylvania BS (Delaware), C & S Administrative Services (New Hampshire and Maine), Equicor (Tennessee), and Group Health Insurance (New York). 71.5 percent had at least one change to the practice prior to, and aside from, de-activation. The practice settings for several carriers had at least one change (method D) prior to de-activation for all of such practice settings. Michigan BC/BS and Utah BC/BS had the highest mean number of data elements (method B) that changed for each

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[8]This value is somewhat less than the number of practice settings added according to Table 4-2 because those practice settings that were subsequently de-activated were not included in Table 4-4.

[9]Problems in transmitting records to the Registry might have contributed to the large number of changes for the carrier for Michigan.

[10]Practice settings that were newly added during 1994 but subsequently de-activated were not included in Table 4-5. They were, however, included in the de-activated counts presented in Table 4-2. These different inclusion criteria account for discrepancies in the number de-activated between the two tables.

TABLE 4-4

CHANGES TO PRACTICE SETTINGS NEWLY ADDED AFTER JANUARY 1994

			PRACTICE SETTING WITH ANY CHANGE			FOR PRACTICE SETTINGS THAT HAD AT LEAST ONE CHANGE	
Number	Carrier	Number of Practice Settings Added	Number	Percent	Mean Changes Per Practice Setting	Mean Number Of Record Changes	Mean Number of Data Elements Changed
00510	Alabama BC/BS	3,065	2,397	78.2 %	0.87	1.11	1.26
00520	Arkansas BC/BS, AR	1,881	676	35.9	0.37	1.03	1.29
00528	Arkansas BC/BS, LA	4,568	1,592	34.9	0.36	1.05	1.45
00542	California BS	30,721	1,032	3.4	0.03	1.02	1.99
00824	Colorado BC/BS	1,585	695	43.8	0.45	1.02	1.27
00570	Pennsylvania BS, DE	199	124	62.3	0.65	1.04	2.13
00580	Pennsylvania BS, DC	945	557	58.9	0.64	1.09	2.13
00590	Florida BC/BS	11,566	3,522	30.5	0.34	1.10	1.60
00621	Illinois BC/BS	7,097	3,909	55.1	0.57	1.03	1.93
00630	Indiana BC/BS	3,799	2,357	62.0	0.64	1.04	1.15
00640	Iowa BS	1,888	961	50.9	0.52	1.03	1.46
00650	Kansas BS, KS	928	614	66.2	0.67	1.01	2.03
00655	Kansas BS, NE	1,024	756	73.8	0.75	1.02	1.87
00660	Kentucky BC/BS	2,248	1,553	69.1	0.69	1.00	1.18
00901	Maryland Blue Shield	3,252	862	26.5	0.27	1.04	1.77
00700	C&S Administrative Services, MA	4,198	151	3.6	0.04	1.01	1.68
00623	Michigan BC/BS	56,167	52,513	93.5	0.94	1.00	3.00
00720	Minnesota BC/BS	1,608	795	49.4	0.50	1.00	1.42
00740	Kansas BS, MO	1,279	822	64.3	0.65	1.01	1.94
00751	Montana BC/BS	2,866	2,039	71.1	0.79	1.11	2.89
00780	C&S Administrative Services, NH	486	19	3.9	0.04	1.00	3.53
00781	C&S Administrative Services, VT	275	19	6.9	0.07	1.05	3.42
00801	Blue Shield of Western New York	3,002	1,616	53.8	0.54	1.00	1.16
00803	Empire BC/BS, NY	58,832	2,269	3.9	0.04	1.03	1.68
00820	North Dakota BC/BS, ND-SD	701	198	28.2	0.29	1.03	1.59
00825	North Dakota BC/BS, WY	239	74	31.0	0.31	1.00	1.49
00860	Pennsylvania BS, NJ	1,578	863	54.7	0.59	1.09	2.10
00865	Pennsylvania BS, PA	3,242	2,150	66.3	0.71	1.07	2.08
00870	Rhode Island Blue Shield	719	47	6.5	0.07	1.04	1.17
00880	South C...lina BC/BS	2,304	521	22.6	0.23	1.00	4.61
00900	Texas BC/BS	12,681	5,478	43.2	0.46	1.06	2.00
00910	Utah BC/BS	4,663	2	0.0	0.00	1.00	4.50
00951	Wisconsin Physician Service	4,534	466	10.3	0.10	1.01	1.83
00973	S.S.S., PR	381	49	12.9	0.13	1.00	2.69
01020	Aetna Life and Casualty, AK	294	41	13.9	0.14	1.00	1.76
01030	Aetna Life and Casualty, AZ	3,654	766	21.0	0.22	1.04	1.39
01040	Aetna Life and Casualty, GA	3,760	877	23.3	0.23	1.00	1.33
01120	Aetna Life and Casualty, HI	837	119	14.2	0.14	1.00	1.28
01290	Aetna Life and Casualty, NV	778	139	17.9	0.18	1.01	1.19
01360	Aetna Life and Casualty, NM	693	49	7.1	0.07	1.02	1.78
01370	Aetna Life and Casualty, OK	1,307	264	20.2	0.21	1.03	1.64
01380	Aetna Life and Casualty, OR	1,892	158	8.4	0.09	1.02	1.66
01390	Washington Physician Service	2,878	186	6.5	0.07	1.02	1.24
02050	Transamenca Occidental	13,434	9,656	71.9	0.87	1.21	1.51
05130	Equicor Life Assurance, ID	316	213	67.4	0.75	1.11	1.53
05440	Equicor Life Assurance, TN	2,838	1,423	50.1	0.51	1.01	1.66
05535	Prudential, NC	3,182	1,785	56.1	0.57	1.01	1.17
10072	Railroad Retirement Board	4,569	18	0.4	0.00	1.00	6.78
10074	Railroad Retirement Board	13,816	277	2.0	0.02	1.01	2.85
10230	Travelers Insurance Co., CT	1,904	90	4.7	0.05	1.03	1.79
10240	Travelers Insurance Co., MN	2,138	146	6.8	0.07	1.01	1.32
10250	Travelers Insurance Co., MS	1,066	107	10.0	0.11	1.07	1.50
10490	Travelers Insurance Co., VA	3,172	151	4.8	0.05	1.02	1.68
11260	Missoun General Am. , MO	3,518	2,540	72.2	0.80	1.11	4.20
14330	Group Health Insurance, NY	1,176	523	44.5	0.47	1.07	1.66
16360	Nationwide Insurance Co., OH	8,437	3,886	46.1	0.47	1.01	2.16
16510	Nationwide Insurance, WV	1,033	347	33.6	0.34	1.01	2.11
21200	C&S Administrative Serv., ME	580	36	6.2	0.07	1.08	2.03
	Total	311,793	115,495	37.0			

NOTE: The number of practice settings may include transient records

SOURCE: Health Economics Research, Inc. tabulations of January 1994, April 1994, July 1994, October 1994 and January 1995 Physician Registry files.

TABLE 4-5

CHANGES TO PRACTICE SETTINGS DEACTIVATED DURING 1994

			PRACTICE SETTING WITH ANY CHANGE			FOR PRACTICE SETTINGS THAT HAD AT LEAST ONE CHANGE	
Number	Carrier	Number of Practice Settings Deactivated	Number	Percent	Mean Changes Per Practice Setting	Mean Number of Record Changes	Mean Number of Data Elements Changed
00510	Alabama BC/BS	3,271	2,064	63 1 %	0.72	1 14	2.27
00520	Arkansas BC/BS, AR	1,958	1,149	58 7	0 71	1.22	2 06
00528	Arkansas BC/BS, LA	3,057	1,909	62 4	0 67	1.07	2.24
00542	California BS	5,254	4,405	83.8	0 85	1.01	1.92
00824	Colorado BC/BS	1,115	984	88.3	1.01	1.15	2.24
00570	Pennsylvania BS, DE	19	19	100.0	1 47	1.47	3 89
00580	Pennsylvania BS, DC	85	81	95 3	1.32	1 38	3.02
00590	Florida BC/BS	9,331	6,230	66.8	0 75	1.12	2.19
00621	Illinois BC/BS	952	818	85.9	0.89	1.03	3.34
00630	Indiana BC/BS	744	564	75 8	0 91	1.20	2.17
00640	Iowa BS	2,180	2,006	92.0	1.02	1.11	1 80
00650	Kansas BS, KS	969	691	71 3	0.73	1.03	2.21
00655	Kansas BS, NE	990	684	69 1	0.71	1.03	2.00
00660	Kentucky BC/BS	406	285	70 2	0 75	1 06	1.77
00901	Maryland Blue Shield	355	76	21.4	0 22	1.01	2.41
00700	C&S Administrative Services, MA	927	778	83 9	0 85	1.01	3.10
00623	Michigan BC/BS	1,348	1,276	94.7	1.47	1.56	17.11
00720	Minnesota BC/BS	2,149	2,037	94 8	0 99	1.05	2.35
00740	Kansas BS, MO	1,158	1,004	86.7	0 93	1.08	2 87
00751	Montana BC/BS	2	2	100.0	1.00	1 00	2.00
00780	C&S Administrative Services, NH	43	39	90 7	0 93	1.03	2.62
00781	C&S Administrative Services, VT	115	77	67.0	0 67	1.00	2.75
00801	Blue Shield of Western New York	2,603	2,414	92.7	0 95	1.02	2.59
00803	Empire BC/BS, NY	112	106	94 6	1 00	1.06	4.15
00820	North Dakota BC/BS, ND-SD	837	698	83.4	0 89	1.07	3.44
00825	North Dakota BC/BS, WY	391	360	92.1	0 97	1.06	2 17
00860	Pennsylvania BS, NJ	173	163	94 2	1 43	1.52	3.08
00865	Pennsylvania BS, PA	573	528	92.1	1 32	1 43	2 86
00870	Rhode Island Blue Shield	657	319	48 6	0 49	1.01	2.37
00880	South Carolina BC/BS	6,457	6,426	99 5	1 02	1.02	4 68
00900	Texas BC/BS	9,991	6,336	63 4	0 67	1.06	2.06
00910	Utah BC/BS	2	2	100 0	1 50	1.50	13.50
00951	Wisconsin Physician Service	5,946	4,667	78 5	0 79	1.01	2.41
00973	S.S.S., PR	3	3	100 0	1 00	1.00	2.33
01020	Aetna Life and Casualty, AK	397	377	95 0	0 97	1.02	3.27
01030	Aetna Life and Casualty, AZ	2,325	1,851	79 6	0 81	1.02	2.75
01040	Aetna Life and Casualty, GA	795	650	81 8	0 82	1.00	3.21
01120	Aetna Life and Casualty, HI	170	161	94 7	0.95	1.01	2 53
01290	Aetna Life and Casualty, NV	681	529	77.7	0 78	1.00	2 40
01360	Aetna Life and Casualty, NM	386	238	61.7	0 64	1.04	4 00
01370	Aetna Life and Casualty, OK	903	701	77 6	0 82	1.06	2 97
01380	Aetna Life and Casualty, OR	2,453	2,407	98 1	1.04	1.06	3.71
01390	Washington Physician Service	1,378	1,052	76 3	0 81	1.06	2.32
02050	Transamerica Occidental	4,274	3,852	90 1	1 10	1.22	2.70
05130	Equicor Life Assurance, ID	234	200	85 5	0 88	1.04	1.74
05440	Equicor Life Assurance, TN	12	12	100 0	1.08	1.08	2.92
05535	Prudential, NC	1,247	1,017	81.6	0 86	1.05	1 89
10072	Railroad Retirement Board	187	81	43 3	0 44	1.01	2.49
10074	Railroad Retirement Board	927	390	42 1	0.43	1 03	2 88
10230	Travelers Insurance Co., CT	2,322	1,316	56 7	0 59	1.03	2.48
10240	Travelers Insurance Co., MN	2,493	908	36 4	0 38	1.05	1.33
10250	Travelers Insurance Co., MS	1,559	553	35.5	0 37	1.04	1.58
10490	Travelers Insurance Co., VA	1,991	788	39 6	0 42	1.05	2 18
11260	Missoun General Am. , MO	4,155	3,003	72.3	0 75	1.04	2 88
14330	Group Health Insurance, NY	306	259	84 6	0 88	1.03	2 88
16360	Nationwide Insurance Co., OH	8,954	4,096	45 7	0 47	1.02	1 99
16510	Nationwde Insurance, WV	1,495	587	39 3	0 40	1 01	1 85
21200	C&S Administrative Serv.,ME	57	54	94 7	0 95	1.00	2.70
	Total	103,874	74,282	71 5			

SOURCE: Health Economics Research, Inc. tabulations of January 1994, April 1994, July 1994, October 1994 and January 1995 Physician Registry files.

practice setting that had a change. Once, again, their values might not be accurate. Aside from Michigan and Utah, the carriers with the highest mean number of data elements that changed were South Carolina BC/BS at 4.68, North Dakota BC/BS (ND & SD) at 4.15, and Aetna (New Mexico) at 4.0.

4.1.4 Total Number of Changes to Specific Data Elements

In this section, changes to specific data elements in the Registry are tabulated. The Registry data elements that are tracked are restricted to those provided by carriers to the Registry contractor, Transamerica Occidental Life Insurance Company. The types of data elements tracked include physician name, credentials, licensure information, specialty, and medical education information. A full list of data elements that carriers send to the Registry is in Appendix E. Some of these data elements are purely administrative in nature and are not included in the analysis.

Unlike the previous sections, each and every change to the Registry data elements included in Table 4-6 was tabulated (method A). Thus, if a carrier changed the school code on a practice setting four times, four changes will be tabulated. By using this method of counting changes, total change activity on the Registry can be determined. The types of changes tabulated include the replacement of blanks (missing values) by new values as well correction of erroneous values. In the first column after the carrier name in Table 4-6 is the number of total number of quarterly records, other than January 1994, for practice settings for each carrier. It represents the maximum number of changes possible for each data element. It includes added, deactivated, reactivated and other setting records. In the following columns, the total number of changes to each data element during 1994 is presented.

Of the 4.9 million changes to the Registry data elements included in Table 4-6,[11] nearly half are from Michigan BC/BS and Empire BC/BS. The 1.58 million changes to Michigan's data elements clearly seems abnormally large and should not be regarded as typical of carrier workloads. Even for a change in a carrier contract, it seems to be a very large number of changes to individual data elements. If changes from Michigan and Empire are not included, the total number of changes to Registry data elements was about 2.5 million during 1994.

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[11]The column totals for each data element were summed to obtain the total number of changes.

TABLE 4-6

CHANGES TO SPECIFIC DATA ELEMENTS BETWEEN JANUARY 1994 AND JANUARY 1995

			Number of Changes								
					Sanction			Specialty		Licensure	
Carrier Number	Carrier	Number of Quarterly Records*	Date of Birth	Date of Death	Code	Effective Date	Number of Years	Primary	Secondary	State Licensed In	License Number
00510	Alabama BC/BS	129,650	100	90	16	27	23	105	106	8	16,444
00520	Arkansas BC/BS, AR	72,238	3,854	116	4	31	31	388	367	27	9,481
00528	Arkansas BC/BS, LA	140,292	1,659	331	25	203	202	1,545	1,576	178	7,363
00542	California BS	736,115	78	443	25	68	68	2,387	80	74	74
00824	Colorado BC/BS	75,309	269	30	1	9	9	266	81	8	5,978
00570	Pennsylvania BS, DE	15,235	81	6	0	1	2	44	1	214	703
00580	Pennsylvania BS, DC	85,781	665	25	20	36	32	531	12	2,881	2,550
00590	Florida BC/BS	473,678	18,898	275	161	238	234	2,449	164	74	40,631
00621	Illinois BC/BS	319,844	6,331	721	76	547	530	2,502	2,144	489	4,368
00630	Indiana BC/BS	132,252	3,198	54	12	39	39	128	26	26	20,550
00640	Iowa BS	79,640	268	97	22	66	52	159	1,196	32	132
00650	Kansas BS, KS	43,967	164	60	5	44	58	137	41	95	870
00655	Kansas BS, NE	35,161	184	35	4	25	26	154	24	208	257
00660	Kentucky BC/BS	96,861	192	44	4	18	18	200	43	14	16,188
00901	Maryland Blue Shield	116,835	1,673	33	25	58	41	448	217	33	2,595
00700	C&S Administrative Services, MA	272,638	4,239	163	12	41	40	1,260	90	54	3,531
00623	Michigan BC/BS	296,138	70,755	70,489	232	70,473	70,462	70,958	70,456	70,419	72,141
00720	Minnesota BC/BS	66,589	1,563	182	9	169	169	606	169	281	12,048
00740	Kansas BS, MO	53,086	127	46	2	31	31	125	32	255	3,523
00751	Montana BC/BS	16,720	3,973	3,951	3	3,946	3,946	4,071	4,082	3,944	4,228
00780	C&S Administrative Services, NH	29,631	173	11	4	8	8	107	7	10	357
00781	C&S Administrative Services, VT	20,168	178	8	0	2	2	76	9	8	307
00801	Blue Shield of Western New York	127,865	2,019	51	8	22	23	607	14	14	2,401
00803	Empire BC/BS, NY	405,116	38,898	38,768	342	38,989	38,989	39,167	38,712	38,712	40,621
00820	North Dakota BC/BS, ND-SD	33,104	486	47	888	15	15	108	249	11	1,509
00825	North Dakota BC/BS, WY	10,461	42	5	2	2	2	27	56	0	63
00860	Pennsylvania BS, NJ	146,597	751	41	19	27	26	620	11	1,370	2,528
00865	Pennsylvania BS, PA	352,996	2,016	121	41	81	82	2,227	39	2,812	14,280
00870	Rhode Island Blue Shield	26,804	28	6	3	9	8	110	62	9	167
00880	South Carolina BC/BS	104,150	1,854	811	34	768	754	2,049	1,307	744	8,759
00900	Texas BC/BS	442,270	3,566	472	76	341	326	1,164	256	253	1,477
00910	Utah BC/BS	28,921	5,078	5,081	28	5,077	5,077	5,078	5,077	5,077	4,909
00951	Wisconsin Physician Service	1[illegible],526	385	260	8	182	182	380	174	174	335
00973	S.S.S., PR	45,646	37	5	0	2	2	174	111	4	7,735
00974	S.S.S., VI	32	1	0	0	0	0	0	0	0	1
01020	Aetna Life and Casualty, AK	11,159	17	4	3	6	6	138	251	12	376
01030	Aetna Life and Casualty, AZ	96,529	666	71	44	64	56	1,066	406	18	1,444
01040	Aetna Life and Casualty, GA	128,864	587	44	7	34	35	918	286	36	1,248
01120	Aetna Life and Casualty, HI	27,986	359	18	2	3	2	304	15	67	1,001
01290	Aetna Life and Casualty, NV	27,986	43	19	2	9	6	320	106	36	487
01360	Aetna Life and Casualty, NM	32,645	340	19	4	9	9	1,428	283	56	717
01370	Aetna Life and Casualty, OK	58,586	1,336	82	9	62	58	351	1,060	131	2,179
01380	Aetna Life and Casualty, OR	79,420	185	106	53	84	85	1,331	2,170	40	3,523
01390	Washington Physician Service	107,647	142	84	19	37	41	923	481	22	216
02050	Transamerica Occidental	531,002	2,062	247	20	59	58	2,355	12,196	40	74,139
05130	Equicor Life Assurance, ID	18,989	105	9	2	4	2	20	2	2	1,888
05440	Equicor Life Assurance, TN	119,710	111	18	6	11	11	211	5	6	13,678
05535	Prudential, NC	176,377	170	48	0	4	4	226	4	5	16,764
10072	Railroad Retirement Board	897,501	612	201	0	200	200	327	302	211	967
10074	Railroad Retirement Board	676,505	1,181	339	3	336	336	480	377	347	1,614
10230	Travelers Insurance Co., CT	78,338	2,718	56	2	16	10	434	450	19	5,919
10240	Travelers Insurance Co., MN	70,522	222	36	11	23	16	208	119	19	2,305
10250	Travelers Insurance Co., MS	50,109	375	28	12	23	22	522	51	18	1,143
10490	Travelers Insurance Co., VA	102,540	690	60	38	57	58	259	180	20	1,607
11250	Missouri General Am. , MO	108,489	1,186	477	58	435	423	3,417	2,676	376	18,471
14330	Group Health Insurance, NY	43,394	173	30	38	16	16	109	39	5	4,521
16360	Nationwide Insurance Co., OH	376,320	2,518	699	20	635	622	2,315	602	611	1,696
16510	Nationwide Insurance, WV	65,783	292	53	9	69	63	339	50	89	658
21200	C&S Administrative Serv.,ME	29,563	384	18	0	7	5	106	7	6	609
Totals (including Michigan & Empire)		9,064,300	190,277	125,644	2,473	123,798	123,653	158,366	149,111	130,704	466,294
	Share of Total Changes		3.8%	2.5%	0.0%	2.5%	2.5%	3.2%	3.0%	2.6%	9.4%
Totals (excluding Michigan & Empire)		8,363,046	80,624	16,387	1,899	14,336	14,202	48,341	39,941	21,573	353,532
	Share of Total Changes		3.2%	0.6%	0.1%	0.6%	0.6%	1.9%	1.6%	0.8%	13.9%

*The number of quarterly records may include transient records

SOURCE: Health Economics Research, Inc. tabulations of January 1994, April 1994, July 1994, October 1994 and January 1995 Physician Registry files

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	Number of Changes															
	Schooling		Board Certification					Zip Codes				Name fields				
Carrier Number	School Code	Graduation Year	Primary	Secondary	Credentials	Physician Status	Participation Status	Billing	Business	DRIP	Group Practice Indicator	Last	First	Middle	Suffix
00510	208	91	4,289	154	70	7	789	5,247	3,318	4,042	1,543	84	47	66	37
00520	615	550	1,612	371	140	27	932	1,198	1,124	2,381	115	154	359	279	13
00528	1,088	1,069	6,966	553	233	184	1,667	2,309	1,302	4,109	344	276	636	522	61
00542	92	87	49	71	49	48	8,241	9,300	10,959	8,266	184	444	177	227	15
00824	961	329	945	15	346	10	1,888	13,019	2,405	1,312	31	65	325	914	78
00570	116	88	718	425	7	1	401	3,212	3,188	28	1,204	4	21	13	0
00580	689	655	3,725	1,946	25	18	2,285	18,092	18,335	143	6,481	55	96	103	5
00590	5,964	5,123	6,740	223	106	78	10,543	43,470	24,333	11,145	689	661	1,099	1,608	964
00621	6,791	8,153	3,877	11,786	709	475	7,725	47,019	53,542	1,631	895	755	1,613	4,343	157
00630	3,966	3,647	26	1,300	131	26	898	10,148	4,815	860	33	128	177	504	264
00640	3,988	258	299	1,346	170	33	1,747	15,772	736	2,391	91	64	626	1,218	360
00650	323	282	367	6,237	59	41	420	4,569	4,443	1,067	2,069	51	376	460	71
00655	201	211	113	5,358	40	22	503	4,220	3,982	1,091	1,340	30	316	441	35
00660	586	171	106	28	17	14	1,153	8,846	5,093	1,255	649	35	768	1,413	134
00901	688	809	48	41	36	33	99	16,592	15,369	540	71	77	136	74	31
00700	4,101	4,073	30	32	58	30	1,377	20,453	20,455	1,253	163	163	138	111	43
00623	71,327	71,227	75,696	18,074	70,425	70,419	71,640	117,656	121,060	72,848	70,741	70,581	71,730	39,222	1,192
00720	2,496	1,800	303	161	292	161	5,381	1,109	704	2,438	2,303	187	311	436	119
00740	330	117	114	5,317	91	29	481	14,945	4,274	1,257	118	46	200	340	87
00751	4,017	4,039	4,519	5,287	3,967	3,945	4,191	5,747	5,408	4,327	4,432	3,956	4,179	3,429	954
00780	247	399	4	3	12	5	582	2,851	2,851	87	13	15	23	20	10
00781	216	293	2	2	41	2	426	1,568	1,570	136	9	11	15	13	7
00801	1,366	1,739	168	0	84	16	5,253	13,555	13,568	2,736	9,787	107	421	635	73
00803	38,823	38,819	38,738	2,303	38,900	38,712	39,767	41,134	41,080	38,835	38,768	38,901	38,910	28,512	1,839
00820	1,159	1,008	155	250	22	12	1,592	3,838	1,068	1,178	1,088	31	138	217	14
00825	230	171	27	109	9	3	260	1,854	78	434	43	5	30	56	4
00860	615	246	3,222	343	78	19	2,977	26,998	27,872	252	8,792	78	169	255	21
00865	3,288	1,890	11,784	5,595	278	44	10,440	75,100	75,931	784	25,600	132	534	298	19
00870	142	77	455	938	23	6	704	366	165	708	14	14	38	67	38
00880	2,439	2,372	3,065	1,141	1,429	747	1,776	8,178	6,830	7,362	2,155	755	2,191	1,332	615
00900	4,451	4,664	1,473	5	323	255	8,988	22,038	22,367	11,251	348	713	1,498	2,266	294
00910	5,077	5,078	5,077	5,055	5,077	5,077	5,077	5,084	5,083	5,080	5,078	5,092	5,086	4,196	1,644
00951	336	5,863	358	4,728	183	174	3,743	9,959	10,023	6,817	4,157	224	478	615	29
00973	33	64	4	2	4	3	573	4,778	3,722	7	219	27	91	110	0
00974	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0
01020	94	85	149	238	7	3	429	1,128	1,297	448	6	13	33	42	10
01030	748	722	876	454	23	13	1,733	7,053	7,670	2,632	30	102	425	855	191
01040	621	601	275	210	66	36	1,375	9,488	10,039	936	127	41	486	496	319
01120	103	94	109	29	1	0	736	2,764	3,763	174	254	15	57	115	10
01290	72	42	154	74	9	5	438	2,148	2,710	787	79	38	77	243	62
01360	495	473	108	139	6	5	535	2,755	2,340	419	58	38	41	103	7
01370	1,186	1,194	277	310	290	50	2,144	6,019	6,713	1,003	1,020	88	193	667	38
01380	517	372	1,047	1,388	44	31	3,010	7,683	8,837	2,660	121	106	161	246	106
01390	2,495	2,460	2,714	14,762	43	26	1,508	8,916	7,755	4,073	1,982	147	586	1,698	14,463
00250	2,629	16,190	8,362	37,884	196	65	4,683	45,763	23,012	5,541	8,333	730	2,361	2,235	363
05130	153	103	5	93	3	2	450	1,224	722	318	10	6	44	70	0
05440	519	67	7	867	7	6	1,973	7,292	2,015	23	57	40	119	194	49
05535	162	1,066	6	538	5	4	1,390	9,216	3,985	1,268	49	28	182	234	31
10072	705	582	340	100	206	200	294	1,467	1,120	411	502	628	624	536	104
10074	1,274	1,256	489	50	347	334	544	2,465	1,946	1,610	861	931	1,037	782	146
10230	3,527	2,944	117	441	16	10	2,319	849	738	2,521	171	28	96	134	950
10240	997	810	23	110	13	12	1,118	2,677	926	2,887	88	53	56	70	3
10250	614	682	25	36	26	11	1,717	1,218	669	1,709	79	18	73	61	20
10490	1,099	937	170	157	25	23	1,578	993	540	2,288	591	81	204	283	91
11260	1,190	1,190	5,738	2,710	527	383	3,894	17,541	19,510	5,768	1,512	518	1,118	2,184	389
14330	124	105	1,146	205	124	5	965	3,537	2,050	404	185	13	231	544	15
16360	4,365	5,060	798	818	652	602	13,242	13,994	19,819	10,054	1,469	803	1,110	1,569	118
16510	496	324	89	122	59	50	1,467	1,864	2,341	1,627	250	90	192	247	33
21200	398	410	5	5	9	5	404	3,092	3,092	75	8	28	24	22	15
	191,752	203,171	198,103	140,939	126,138	122,555	252,666	730,739	650,661	247,585	207,429	128,484	142,480	107,985	26,760
	3.9%	4.1%	4.0%	2.8%	2.5%	2.5%	5.1%	14.8%	13.2%	5.0%	4.2%	2.6%	2.9%	2.2%	0.5%
	81,602	93,125	83,669	120,562	16,813	13,424	141,259	571,949	488,521	135,902	97,920	19,002	31,840	40,251	23,729
	3.2%	3.7%	3.3%	4.7%	0.7%	0.5%	5.5%	22.4%	19.2%	5.3%	3.8%	0.7%	1.2%	1.6%	0.9%

Aside from the two carriers with suspect data, TOLIC had the largest total number of changes with 249,000 followed by Pennsylvania BS (Pennsylvania) with 233,000.

The data elements that had the most changes were the billing and business zip codes with 730,739 and 650,661 changes, respectively, if Michigan and Empire are included in the tabulations, and 571,949 and 488,521 changes, respectively, if they are not included. The state license number had the third highest number of changes, with 466,294, including Michigan and Empire, and 353,532 not including Michigan and Empire. Together these three data elements accounted for 37.4 percent of all changes when Michigan and Empire are included in the tabulations and 55.5 percent of all changes when Michigan and Empire are excluded from the tabulations.

The data elements that had the fewest total number of changes, excluding Michigan and Empire from the tabulations, with less than 20,000 each were: date of death, the three sanction data elements, credentials, physician status, and the physicians' last name.

When tabulations for the total number of changes to data elements (method A) are restricted to those practice settings that were active in all five quarterly Registry files, the data element change totals are only slightly affected by the inclusion/exclusion of Michigan BC/BS and Empire BC/BS (Table 4-7). Note that the number of practice settings active in all five files was unusually low for a carrier the size of Michigan. And, as previously noted, Utah and Montana also have an unusually low number of practice settings active in all five quarters. As one of the largest carriers, TOLIC had the most total changes, with 208,427, and Pennsylvania BS (Pennsylvania) had the second highest, with 200,898. Illinois BC/BS (Illinois), with 145,266, and Florida BC/BS, with 138,989, were the only other two carriers with more than 100,000 total changes to data elements.

With about 1.7 million total changes across data elements in the Registry, it is clear that the vast majority of changes are made to practice settings that remain active. As in Table 4-6, the data elements that had the most changes in Table 4-7 were the billing and business zip codes and the state license number. Together these three data elements accounted for nearly two-thirds of all changes to data elements on practice settings active in all five quarterly Registry files. Eight data elements had less than 5,000 changes each: date of death,[12] the three sanction data elements, credentials, physician status, DRIP status, and the physicians' last

[12]The date of death field is left blank until information is received that the physician is deceased. Thus, in this case, a blank does not usually represent missing values. The same type of logic applies to the three sanction data elements.

name. The changes to date of death were made, presumably, between the last two quarterly files and that the April 1995 file would have the pertinent practice settings de-activated.

It is unlikely that zip codes changed as much as they did from either new practice locales or re-assignment of zip codes by the post office, it is puzzling why they changed so much.[13] Similarly, it is unlikely that changes in state license number formats account for the high number of license number changes in the Registry. Perhaps these changes were a response by carriers to the HCFA Bureau of Program Operation's (BPO) directive during the second half of 1994 to correct their data and fill in missing data.[14]

4.1.5 Total Number of Practice Settings With Changes to Specific Data Elements

In the previous section, the focus was on total volume of changes made to Registry practice elements. In this section, the focus is on the number of practice settings that have a change for a given data element. Accordingly, the number of practice settings instead of the number of quarterly records is in the column immediately after the carrier name in Table 4-8. For instance, date of birth was changed on 98 practice settings (counting method D) in Alabama during 1994. Since the comparable number in Table 4-6 was 100, date of birth changed twice on two of the practice settings. Thus, of the 2.2 million practice settings (not including Michigan BC/BS and Empire BC/BS), date of birth was changed on 79,482.

Of the nearly 4.9 million data elements that changed (Table 4-8), about half are due to Michigan and Empire. Of the other carriers, TOLIC, Pennsylvania BS (Pennsylvania), Illinois BC/BS, Florida BC/BS, and Utah BC/BS each had well over 100,000 data elements that changed at least once during 1994. As with Michigan and Empire, Utah's counts should be cautiously interpreted.

As in the two previous tables, billing and business zip codes and the state license number changed most. Excluding Michigan and Empire from the tabulations, these three data elements account for 55.2 percent of the total number of data elements that changed. Three

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[13]When there is a change in a practice's location *within a payment locality*, some carriers change the zip code instead of de-activating the practice setting and creating a new practice setting. Another explanation is that, as noted in Chapter 3, some carriers maintain Registry data separate from their provider file and do not ensure that the two files are consistent.

[14]When updating other data elements on a Registry practice setting, BPO instructed carriers to also include a valid state license number if it was previously missing. BPO's clean-up directives likely account for a majority of the license number changes, but not necessarily so for the zip codes.

TABLE 4-7

CHANGES TO SPECIFIC DATA ELEMENTS BETWEEN JANUARY 1994 AND JANUARY 1995
(RESTRICTED TO ACTIVE PRACTICE SETTINGS IN ALL 5 QUARTERS)

			NUMBER OF CHANGES								
					Sanction			Specialty		Licensure	
Carrier Number	Carrier	Number of Quarterly Records	Date of Birth	Date of Death	Code	Effective Date	Number of Years	Primary	Secondary	State Licensed In	License Number
00510	Alabama BC/BS	63,732	45	0	0	0	0	78	79	0	12,505
00520	Arkansas BC/BS, AR	42,680	2,291	0	0	0	0	263	248	0	5,366
00528	Arkansas BC/BS, LA	88,044	505	0	2	1	1	1,004	1,000	0	3,344
00542	California BS	430,856	22	0	24	19	19	1,152	19	22	20
00624	Colorado BC/BS	48,072	196	0	0	0	0	216	55	0	4,787
00570	Pennsylvania BS, DE	12,820	62	0	0	0	0	29	0	152	619
00580	Pennsylvania BS, DC	73,088	544	0	19	21	19	475	0	2,583	2,203
00590	Florida BC/BS	320,956	16,742	3	43	43	43	2,001	77	1	35,746
00621	Illinois BC/BS	234,364	5,589	0	56	67	50	1,984	1,534	28	3,663
00630	Indiana BC/BS	107,972	3,006	2	7	7	7	91	0	0	17,724
00640	Iowa BS	39,648	116	0	2	2	1	91	338	0	27
00650	Kansas BS, KS	27,792	103	1	0	0	12	94	3	53	545
00655	Kansas BS, NE	21,524	142	0	0	1	2	127	2	187	218
00660	Kentucky BC/BS	78,688	159	0	4	4	4	181	27	0	13,655
00901	Maryland Blue Shield	89,872	1,543	0	4	4	1	400	171	0	2,439
00700	C&S Administrative Services, MA	227,860	3,934	0	4	3	2	1,183	59	16	3,334
00623	Michigan BC/BS	6,064	19	0	0	0	0	12	0	0	36
00720	Minnesota BC/BS	41,888	522	0	4	4	4	295	6	51	8,020
00740	Kansas BS, MO	33,744	71	0	0	0	0	85	0	96	2,545
00751	Montana BC/BS	36	0	0	0	0	0	0	0	0	0
00780	C&S Administrative Services, NH	25,984	162	0	0	0	0	98	3	6	340
00781	C&S Administrative Services, VT	16,652	167	0	0	0	0	63	7	5	290
00801	Blue Shield of Western New York	78,152	1,670	0	7	7	8	562	0	0	1,883
00803	Empire BC/BS, NY	224,424	112	0	251	250	250	366	0	0	2,337
00820	North Dakota BC/BS, ND-SD	16,164	210	0	596	0	0	69	123	1	764
00825	North Dakota BC/BS, WY	4,580	24	0	0	0	0	10	16	0	26
00860	Pennsylvania BS, NJ	116,900	694	2	19	18	17	558	2	1,048	2,275
00865	Pennsylvania BS, PA	296,700	1,459	2	37	41	41	1,973	2	1,945	11,861
00870	Rhode Island Blue Shield	18,704	8	0	0	0	0	65	40	2	56
00880	South Carolina BC/BS	59,936	37	0	2	0	0	55	90	0	203
00900	Texas BC/BS	211,024	2,620	0	41	54	41	761	2	1	803
00910	Utah BC/BS	6,488	0	0	0	0	0	0	0	0	0
00951	Wisconsin Physician Service	65,320	97	0	0	0	0	156	0	0	76
00973	S.S.S., PR	43,800	35	0	0	0	0	171	107	2	7,671
00974	S.S.S., VI	32	1	0	0	0	0	0	0	0	1
01020	Aetna Life and Casualty, AK	6,312	12	0	0	0	0	63	98	5	257
01030	Aetna Life and Casualty, AZ	55,568	475	0	18	27	18	867	298	3	1,026
01040	Aetna Life and Casualty, GA	105,984	398	0	4	2	2	830	213	6	957
01120	Aetna Life and Casualty, HI	20,360	344	0	2	2	2	301	15	65	948
01290	Aetna Life and Casualty, NV	15,368	23	0	2	3	1	260	80	17	376
01360	Aetna Life and Casualty, NM	25,488	253	0	4	4	4	1,300	187	38	642
01370	Aetna Life and Casualty, OK	46,260	1,158	0	8	11	7	247	884	79	1,919
01380	Aetna Life and Casualty, OR	48,124	112	0	5	5	6	616	779	7	2,577
01390	Washington Physician Service	72,678	92	0	4	4	4	661	385	0	134
02050	Transamerica Occidental	408,212	1,902	0	8	8	7	2,014	11,893	1	61,042
05130	Equicor Life Assurance, ID	12,464	96	0	0	0	0	15	0	0	1,583
05440	Equicor Life Assurance, TN	111,616	104	0	5	5	5	205	0	1	12,310
05535	Prudential, NC	150,032	155	2	0	0	0	191	0	1	14,571
10072	Railroad Retirement Board	872,108	391	1	0	0	0	126	101	10	742
10074	Railroad Retirement Board	610,940	504	0	1	1	1	114	33	12	1,001
10230	Travelers Insurance Co., CT	50,204	1,642	0	0	0	0	331	280	8	4,373
10240	Travelers Insurance Co., MN	39,088	116	0	0	0	0	50	54	6	1,478
10250	Travelers Insurance Co., MS	26,144	241	0	3	3	3	360	38	6	930
10490	Travelers Insurance Co., VA	61,436	325	0	0	0	0	201	144	1	1,181
11260	Missouri General Am., MO	55,052	541	1	6	2	2	2,069	1,561	2	13,651
14330	Group Health Insurance, NY	33,396	130	0	17	12	12	94	24	3	3,914
16360	Nationwide Insurance Co., OH	236,728	1,184	0	14	25	14	1,273	0	7	755
16510	Nationwide Insurance, WV	42,584	133	0	5	14	9	208	0	35	396
21200	C&S Administrative Serv.,ME	25,004	368	0	0	2	0	101	2	0	585
Totals (including Michigan & Empire)		6,285,708	53,606	14	1,228	676	619	27,165	21,079	6,512	272,860
Share of Total Changes			3.1%	0.0%	0.1%	0.0%	0.0%	1.6%	1.2%	0.4%	15.8%
Totals (excluding Michigan & Empire)		6,055,220	53,475	14	977	426	369	27,787	21,079	6,512	270,487
Share of Total Changes			3.1%	0.0%	0.1%	0.0%	0.0%	1.6%	1.2%	0.4%	15.7%

SOURCE: Health Economics Research, Inc. tabulations of January 1994, April 1994, July 1994, October 1994 and January 1995 Physician Registry files

NUMBER OF CHANGES

	Schooling		Board Certification					Zip Codes				Name fields			
Carrier Number	School Code	Graduation Year	Primary	Secondary	Credentials	Physician Status	Participation Status	Billing	Business	DRIP	Group Practice Indicator	Last	First	Middle	Suffix
00510	147	40	3,069	109	51	0	582	3,787	2,321	464	959	28	20	29	16
00520	379	322	1,269	238	35	0	711	858	909	80	67	71	180	112	12
00528	183	128	5,694	318	32	4	1,244	1,701	905	111	103	85	289	244	22
00542	41	36	0	14	1	0	4,847	6,314	6,55.	0	109	267	89	134	12
00824	752	209	774	7	269	1	1,423	9,606	1,989	0	18	43	229	667	55
00570	92	68	701	421	4	0	321	2,890	2,881	0	1,082	1	18	10	0
00580	563	531	3,593	1,925	7	3	1,728	16,540	16,905	0	5,958	39	78	82	4
00590	5,195	4,388	5,255	122	30	3	8,224	37,161	20,322	17	551	442	703	1,088	789
00621	6,012	7,361	3,125	11,068	215	14	6,676	40,883	48,461	9	379	229	1,023	3,714	126
00630	3,782	3,527	0	1,209	98	0	719	9,391	4,543	1	7	85	121	435	238
00640	1,489	82	221	806	40	0	1,063	8,610	498	20	37	21	260	493	176
00650	260	206	306	5,482	19	3	350	3,808	3,591	6	2,000	9	309	379	53
00655	167	163	67	4,467	13	1	447	3,296	3,166	4	1,293	5	260	362	26
00660	98	94	68	13	2	0	1,005	7,823	4,326	0	603	17	721	1,255	129
00901	611	730	4	7	2	0	45	14,764	14,401	3	36	11	39	35	2
00700	3,811	3,796	0	0	27	0	1,277	19,545	19,547	55	36	107	76	70	38
00623	54	37	38	42	0	0	31	39	33	0	24	12	40	19	0
00720	1,306	690	99	1	78	0	4,018	688	387	20	1,427	23	80	94	76
00740	218	50	67	3,839	46	0	370	4,070	3,074	19	59	14	117	270	58
00751	0	0	0	0	0	0	0	4	1	0	0	0	0	0	0
00780	238	389	0	0	7	1	562	2,797	2,797	3	6	10	17	14	10
00781	206	283	0	0	35	0	378	1,492	1,492	0	1	9	10	11	6
00801	1,135	1,473	134	0	58	2	3,644	11,731	11,742	0	8,151	53	273	500	52
00803	63	59	25	710	168	0	784	1,724	1,776	1	27	182	133	82	313
00820	667	443	116	126	4	1	826	1,988	736	6	556	11	62	88	9
00825	80	60	1	23	4	1	131	830	53	2	27	3	17	16	3
00860	561	213	3,147	315	53	9	2,490	25,268	26,282	0	8,260	58	137	224	12
00865	2,445	1,351	11,158	5,540	178	4	6,550	65,862	66,836	0	22,826	58	463	219	17
00870	74	23	318	722	14	0	498	223	105	0	4	4	24	41	28
00880	30	30	118	80	25	0	344	1,224	300	84	40	7	107	42	47
00900	3,328	3,481	641	3	35	3	3,368	13,347	13,319	13	44	268	746	1,093	144
00910	0	0	0	0	0	0	0	0	0	0	0	3	3	3	2
00951	77	3,421	84	4,547	6	0	2,129	6,668	6,419	7	2,596	33	181	315	12
00973	30	62	2	0	1	0	542	4,749	3,699	1	200	25	88	109	0
00974	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0
01020	82	73	89	102	3	0	172	814	981	0	2	6	12	25	7
01030	526	506	645	291	10	0	1,322	5,122	5,752	1	13	74	148	388	94
01040	428	410	200	159	31	5	1,220	8,103	9,166	0	92	10	410	407	293
01120	99	92	99	23	1	0	693	2,547	3,573	0	220	14	52	107	10
01290	50	21	108	43	3	0	325	1,630	2,148	1	68	24	44	146	37
01360	408	382	88	76	0	0	476	2,497	2,089	2	31	23	29	91	4
01370	1,057	1,063	196	228	189	0	1,809	5,250	5,937	14	894	32	116	547	26
01380	391	286	669	782	10	0	1,381	5,359	6,544	0	63	60	85	146	78
01390	2,031	2,019	2,070	12,171	18	3	1,249	6,941	6,243	11	1,511	89	405	1,201	11,990
02050	2,569	14,698	7,165	30,866	131	23	2,988	40,041	20,787	2	7,513	547	1,982	1,918	322
05130	101	97	1	31	1	0	351	903	535	0	2	3	33	58	0
05440	505	62	2	780	1	1	1,433	6,990	1,935	3	50	32	104	183	46
05535	147	998	0	401	1	0	1,247	8,154	3,327	2	30	15	154	207	25
00072	480	358	136	90	6	0	92	1,233	891	0	279	407	409	396	93
00074	574	573	120	32	12	0	180	1,843	1,399	6	426	547	633	505	118
00230	2,628	2,235	95	280	2	0	1,719	660	594	0	143	10	60	85	817
00240	636	486	2	53	1	0	825	1,802	692	0	55	38	23	38	2
00250	371	495	5	34	15	0	1,277	898	502	2	61	2	45	26	16
00490	598	492	112	138	4	2	1,136	723	386	13	498	37	116	162	66
01260	548	552	3,643	1,715	89	6	2,769	11,827	13,510	206	720	98	489	1,271	251
14330	111	86	1,058	80	68	3	828	3,147	1,840	42	171	8	212	523	12
16360	2,622	3,234	163	356	44	0	9,034	9,339	13,459	9	302	129	373	781	73
16510	269	166	28	68	8	0	1,033	1,430	1,790	0	109	22	102	147	11
21200	382	394	0	0	2	0	371	3,024	3,024	0	1	21	15	14	13
	51,707	63,524	56,608	90,953	2,207	93	91,258	462,959	397,472	1,240	70,740	4,514	12,964	21,621	16,891
	3.0%	3.7%	3.3%	5.3%	0.1%	0.0%	5.3%	26.8%	23.0%	0.1%	4.1%	0.3%	0.7%	1.3%	1.0%
	51,590	63,428	56,745	90,201	2,039	93	90,443	461,196	395,663	1,239	70,689	4,320	12,791	21,520	16,578
	3.0%	3.7%	3.3%	5.2%	0.1%	0.0%	5.3%	26.8%	23.0%	0.1%	4.1%	0.3%	0.7%	1.3%	1.0%

TABLE 4-8

NUMBER OF PRACTICE SETTINGS WITH AT LEAST ONE CHANGE, BY DATA ELEMENT: JANUARY 1994 - JANUARY 1995

					Number of Changes						
					Sanction			Specialty		Licensure	
Carrier Number	Carrier	Number of Practice Settings*	Date of Birth	Date of Death	Code	Effective Date	Number of Years	Primary	Secondary	State Licensed In	License Number
00510	Alabama BC/BS	33,658	98	90	15	26	22	102	106	8	15,844
00520	Arkansas BC/BS, AR	18,851	3,808	110	4	31	31	388	366	27	9,389
00528	Arkansas BC/BS, LA	37,028	1,620	330	23	201	200	1,536	1,521	178	7,257
00542	California BS	201,435	77	441	25	68	68	2,387	75	74	72
00824	Colorado BC/BS	19,315	265	27	1	9	9	264	81	8	5,946
00570	Pennsylvania BS, DE	3,874	81	6	0	1	2	44	1	208	703
00580	Pennsylvania BS, DC	21,798	662	25	20	36	32	526	12	2,747	2,538
00590	Florida BC/BS	123,630	18,348	275	159	236	232	2,410	164	74	40,222
00621	Illinois BC/BS	82,744	6,298	721	71	538	521	2,501	2,143	489	4,383
00630	Indiana BC/BS	34,681	3,065	54	12	39	39	128	26	26	20,530
00640	Iowa BS	20,687	268	97	22	66	52	159	1,192	32	132
00650	Kansas BS, KS	11,385	162	58	5	44	58	136	41	95	860
00655	Kansas BS, NE	9,196	178	32	4	25	26	154	24	207	251
00660	Kentucky BC/BS	25,028	191	44	4	18	18	200	41	14	16,147
00901	Maryland Blue Shield	30,826	1,671	33	23	56	39	448	217	33	2,594
00700	C&S Administrative Services, MA	69,360	4,234	163	12	41	40	1,260	90	54	3,529
00623	Michigan BC/BS	147,269	70,616	70,436	208	70,441	70,430	70,768	70,452	70,419	71,961
00720	Minnesota BC/BS	17,456	1,572	181	9	169	169	608	167	281	12,036
00740	Kansas BS, MO	13,808	122	46	2	31	31	125	31	249	3,446
00751	Montana BC/BS	8,270	3,973	3,951	3	3,946	3,946	4,070	4,080	3,944	4,228
00780	C&S Administrative Services, NH	7,531	173	11	4	8	8	107	7	10	357
00781	C&S Administrative Services, VT	5,113	178	8	0	2	2	76	9	8	307
00801	Blue Shield of Western New York	33,349	2,005	51	8	22	23	607	14	14	2,398
00803	Empire BC/BS, NY	153,778	38,862	38,766	332	38,978	38,978	39,165	38,712	38,712	40,595
00820	North Dakota BC/BS, ND-SD	8,612	486	47	888	14	14	108	245	11	1,509
00825	North Dakota BC/BS, WY	2,722	42	5	2	2	2	27	56	0	63
00860	Pennsylvania BS, NJ	37,247	749	40	19	27	26	620	11	1,329	2,526
00865	Pennsylvania BS, PA	89,441	1,993	120	41	81	81	2,226	38	2,693	14,250
00870	Rhode Island Blue Shield	7,020	28	6	3	9	8	110	62	9	167
00880	South Carolina BC/BS	27,429	1,843	808	34	768	754	2,042	1,297	744	8,693
00900	Texas BC/BS	116,098	3,528	472	70	335	320	1,163	255	253	1,472
00910	Utah BC/BS	12,597	5,077	5,078	28	5,077	5,077	5,078	5,077	5,077	4,909
00951	Wisconsin Physician Service	31,269	384	260	8	182	182	380	174	174	335
00973	S.S.S., PR	11,537	37	5	0	2	2	172	109	4	7,711
00974	S.S.S., VI	8	1	0	0	0	0	0	0	0	1
01020	Aetna Life and Casualty, AK	2,914	17	4	3	6	6	138	251	12	373
01030	Aetna Life and Casualty, AZ	25,829	666	68	35	50	47	1,058	404	18	1,399
01040	Aetna Life and Casualty, GA	33,749	566	44	7	34	35	918	286	36	1,248
01120	Aetna Life and Casualty, HI	7,296	359	18	2	3	2	304	15	67	1,001
01290	Aetna Life and Casualty, NV	7,349	43	19	2	9	6	320	106	36	473
01360	Aetna Life and Casualty, NM	8,435	338	19	4	9	9	1,425	282	56	714
01370	Aetna Life and Casualty, OK	15,202	1,326	82	9	61	58	350	1,053	131	2,156
01380	Aetna Life and Casualty, OR	20,725	185	106	53	84	85	1,330	2,168	40	3,508
01390	Washington Physician Service	28,243	142	84	19	37	40	923	478	22	215
02050	Transamerica Occidental	138,131	2,047	243	20	59	58	2,353	12,071	40	69,963
05130	Equicor Life Assurance, ID	4,854	105	9	2	4	2	20	2	2	1,868
05440	Equicor Life Assurance, TN	30,954	101	17	6	11	11	210	5	6	13,500
05535	Prudential, NC	45,264	169	48	0	4	4	226	4	5	16,655
00072	Railroad Retirement Board	226,987	611	201	0	200	200	327	302	211	967
00074	Railroad Retirement Board	171,767	1,122	339	3	336	336	479	377	347	1,577
10230	Travelers Insurance Co., CT	20,692	2,658	56	2	16	10	434	450	19	5,828
10240	Travelers Insurance Co., MN	18,607	220	36	9	21	15	208	119	19	2,261
10250	Travelers Insurance Co., MS	12,925	373	28	12	23	22	521	51	18	1,133
10490	Travelers Insurance Co., VA	27,483	689	60	38	56	58	258	179	20	1,603
11260	Missouri General Am. , MO	28,898	1,166	475	53	426	415	3,356	2,561	375	18,118
14330	Group Health Insurance, NY	11,228	173	30	38	16	16	109	37	5	4,517
16360	Nationwide Insurance Co., OH	98,153	2,494	699	20	634	622	2,312	602	611	1,695
16510	Nationwide Insurance, WV	16,929	291	53	9	69	63	339	50	89	657
21200	C&S Administrative Serv .ME	7,520	384	18	0	7	5	106	7	6	609
Totals (including Michigan & Empire)		2,484,184	188,960	125,553	2,405	123,704	123,567	158,119	148,756	130,396	459,399
	Share of Total Changes		3.9%	2.6%	0.0%	2.5%	2.5%	3.2%	3.0%	2.7%	9.4%
Totals (excluding Michigan & Empire)		2,183,137	79,482	16,351	1,865	14,285	14,159	48,186	39,592	21,265	346,843
	Share of Total Changes		3.2%	0.7%	0.1%	0.6%	0.6%	1.9%	1.6%	0.9%	13.9%

*The number of practice settings may include transient records.

SOURCE: Health Economics Research, Inc. tabulations of January 1994, April 1994, July 1994, October 1994 and January 1995 Physician Registry files.

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	Number of Changes																
	Schooling		Board Certification					Zip Codes				Name fields					
Carrier Number	School Code	Graduation Year	Primary	Secondary	Credentials	Physician Status	Participation Status	Billing	Business	DRIP	Group Practice Indicator	Last	First	Middle	Suffix
00510	206	91	4,150	154	70	7	765	4,754	3,212	3,969	1,539	59	46	62	37
00520	563	495	1,609	369	139	27	932	1,148	1,096	2,295	101	153	277	215	13
00528	1,064	1,044	6,965	552	233	184	1,667	1,981	1,273	4,008	333	267	520	429	61
00542	92	87	49	71	49	48	8,237	8,511	9,853	8,171	184	400	168	220	15
00824	958	327	943	15	346	10	1,887	12,572	2,356	1,279	31	64	300	904	78
00570	116	88	717	425	7	1	400	3,062	3,060	25	1,202	4	18	11	0
00580	689	655	3,718	1,946	25	18	2,282	17,397	17,653	126	6,479	55	81	96	5
00590	5,908	5,048	6,683	222	105	76	10,516	40,315	23,650	10,911	687	630	973	1,523	885
00621	6,767	8,119	3,864	11,760	708	474	7,710	46,548	52,029	1,624	895	751	1,569	4,298	154
00630	3,825	3,554	26	1,300	131	26	897	9,558	4,783	860	33	125	136	480	227
00640	3,967	258	299	1,343	170	33	1,747	15,143	726	2,376	91	61	590	1,194	342
00650	321	281	367	6,225	59	41	420	4,555	4,356	1,058	2,068	51	373	457	70
00655	199	209	113	5,327	40	22	503	4,130	3,828	1,074	1,338	30	315	438	35
00660	581	171	106	28	17	14	1,152	8,715	5,083	1,247	648	35	751	1,407	134
00901	687	808	48	41	36	33	99	15,564	15,360	538	71	77	129	63	31
00700	4,099	4,071	30	32	58	30	1,377	20,448	20,450	1,236	183	158	133	104	43
00623	70,902	70,790	75,117	18,062	70,420	70,419	70,818	117,043	120,505	71,572	70,552	70,458	70,563	38,916	1,166
00720	2,484	1,787	303	161	291	161	5,381	1,106	703	2,423	2,303	187	305	422	119
00740	324	114	113	5,179	91	29	479	5,173	4,125	1,337	118	46	194	371	82
00751	4,016	4,039	4,518	5,287	3,967	3,945	4,190	5,653	5,340	4,319	4,432	3,956	4,129	3,421	950
00780	247	399	4	3	12	5	582	2,851	2,851	84	13	15	21	17	10
00781	216	293	2	2	41	2	426	1,568	1,570	133	9	11	15	12	7
00801	1,364	1,738	168	0	84	16	5,230	13,541	13,554	2,718	9,787	107	395	625	73
00803	38,807	38,803	38,738	2,296	38,890	38,712	39,764	41,099	41,035	38,832	38,761	38,899	38,882	28,488	1,837
00820	1,157	1,002	155	245	22	12	1,592	3,735	1,055	1,167	1,088	31	128	205	14
00825	230	170	26	109	9	3	259	1,821	78	433	43	5	25	49	3
00860	614	245	3,213	343	78	19	2,964	26,281	27,056	224	8,777	78	147	229	18
00865	3,260	1,881	11,744	5,594	278	44	10,422	72,806	73,568	727	25,597	127	503	284	18
00870	141	76	455	938	23	6	704	365	165	707	14	14	35	65	37
00880	2,428	2,360	3,037	1,133	1,428	747	1,769	8,101	6,767	7,300	2,147	755	2,150	1,315	564
00900	4,413	4,620	1,473	4	322	255	8,841	20,255	19,656	11,009	347	683	1,400	2,179	294
00910	5,077	5,078	5,077	5,055	5,077	5,077	5,077	5,083	5,081	5,079	5,078	5,080	5,080	4,193	1,636
00951	333	5,861	358	4,728	183	174	3,740	9,842	9,965	6,582	4,157	224	455	598	29
00973	33	64	4	2	4	3	573	4,595	3,694	7	219	27	90	109	0
00974	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0
01020	93	84	149	238	7	3	421	1,106	1,296	437	6	13	32	40	10
01030	742	715	871	454	23	13	1,733	6,939	7,640	2,619	30	101	414	846	190
01040	621	601	274	210	66	36	1,374	9,392	9,995	936	127	41	478	493	319
01120	103	94	109	29	1	0	736	2,754	3,763	174	254	15	57	111	10
01290	72	42	154	74	9	5	437	2,097	2,691	782	79	38	76	242	61
01360	492	471	107	138	6	5	535	2,539	2,331	418	58	37	36	101	7
01370	1,182	1,191	277	309	290	50	2,134	5,606	6,527	999	1,020	88	179	656	38
01380	517	372	1,046	1,375	44	31	2,937	7,326	8,784	2,623	120	106	153	236	106
01390	2,489	2,454	2,713	14,762	43	26	1,506	8,805	7,694	4,063	1,981	142	548	1,650	14,463
02050	2,805	16,001	8,331	26,828	187	65	4,680	44,287	22,925	5,391	8,266	705	2,109	2,108	351
05130	153	103	5	92	3	2	449	1,200	703	315	9	6	31	67	0
05440	517	67	7	862	7	6	1,961	7,076	2,010	23	57	40	103	186	47
05535	160	1,056	6	537	5	4	1,390	9,105	3,973	1,268	49	28	168	225	30
10072	696	582	340	100	206	200	294	1,465	1,023	411	502	619	620	528	104
10074	1,216	1,199	489	50	347	334	543	2,443	1,932	1,562	858	918	1,022	775	144
10230	3,448	2,882	116	440	16	10	2,319	831	729	2,500	171	28	80	118	905
10240	988	805	23	110	13	12	1,117	2,572	920	2,822	88	52	46	56	3
10250	609	671	25	36	26	11	1,717	1,204	667	1,699	79	18	55	47	20
10490	1,098	933	170	156	25	23	1,578	979	538	2,270	590	80	183	267	91
11260	1,182	1,175	5,688	2,698	525	382	3,803	16,653	18,191	5,615	1,478	515	1,096	2,132	387
14330	124	105	1,143	203	124	5	985	3,525	2,048	397	185	13	190	544	15
16360	4,361	5,057	796	818	652	602	13,421	13,821	19,592	10,012	1,468	799	1,082	1,545	118
16510	488	324	89	121	59	50	1,466	1,854	2,326	1,620	250	88	178	236	32
21200	397	410	5	5	8	5	404	3,091	3,091	72	8	28	20	20	15
	190,631	202,020	197,125	129,596	126,105	122,553	251,343	711,992	636,926	244,478	207,058	128,141	139,896	106,628	26,453
	3.9%	4.1%	4.0%	2.7%	2.6%	2.5%	5.1%	14.6%	13.0%	5.0%	4.2%	2.6%	2.9%	2.2%	0.5%
	80,922	92,427	83,270	109,238	16,795	13,422	140,761	553,850	475,386	134,074	97,745	18,784	30,451	39,224	23,450
	3.2%	3.7%	3.3%	4.4%	0.7%	0.5%	5.6%	22.2%	19.1%	5.4%	3.9%	0.8%	1.2%	1.6%	0.9%

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other data elements changed on more than 100,000 practice settings each: Medicare participation status, DRIP status, and secondary board certification. Seven data elements changed on fewer than 20,000 practice settings each: date of death, the three sanction data elements, credentials, physician status, and the physicians' last name.

As before, when the tabulations are restricted to those practice settings that were active in all five quarterly Registry files, the data element change totals are only slightly affected by the inclusion/exclusion of Michigan BC/BS and Empire BC/BS (Table 4-9). Aside from Michigan and Empire, the carriers with the most changes in Table 4-9 were: Pennsylvania BS (Pennsylvania) with 196,294, TOLIC with 192,809, Illinois BC/BS (Illinois) with 143, 214, and Florida BC/BS with 134,062; no other two carriers had more than 100,000.

With nearly 1.7 million changes (excluding Michigan and Empire) across data elements in the Registry, it is clear that the vast majority of changes are made to practice settings that remain active. As in Table 4-8, the data elements that changed on the most practice settings in Table 4-9 were the billing and business zip codes and the state license number. Together these three data elements accounted for nearly two-thirds of all changes to practice settings active in all five quarterly Registry files. Eight data elements changed on less than 5,000 practice settings each: date of death, the three sanction data elements, credentials, physician status, DRIP status, and the physicians' last name.

4.2 Characteristics of Physicians by Claim Activity Status

An underlying premise in undertaking the Registry activity analysis was that the sheer volume of changes could largely explain problems with erroneous values or values that were inconsistent with the values of other Registry data elements and the values of comparable NCH data elements. In this section, we go, in a sense, to the other extreme. That is, the characteristics of physicians whose Registry practice settings indicate that they are active but for whom there is no claims activity are examined. The Registry practice settings of such physicians are probably more likely to have erroneous or out-of-date information than those of physicians who have claims activity. To give the analysis a context, the characteristics of Registry-active but claims-inactive physicians are compared to the characteristics of Registry-active and claims-active physicians.

4.2.1 Methodology

Since the activity status of physicians was ultimately based on their claims activity in 1993, it was necessary to convert selected 1994 Registry practice settings to reflect their 1993 status. Physicians that had at least one active practice setting were selected from the Registry file. De-activated practice settings with a change date after January 1, 1993 were converted to "Registry-active" status in order to account for those practice settings that were deactivated in the Registry but may have been active during 1993. In addition, practice settings added to the Registry after December 31, 1993 were excluded.

Information on physicians claims activity was derived from the quarterly 1993 UPIN/MPIER Comparison files, specially constructed by HCFA, to match physician Registry data with claims activity. This file provides a simple summary of claims activity by carrier/UPIN combination. Since the "Comparison" file is produced quarterly, the four quarters were aggregated to obtain annual line item totals. The "Comparison" file contains the following information:

- UPIN;
- Carrier Number;
- Number of line items; and
- Allowed Charges.

The total for line items was used for data analyses instead of allowed charges because comparisons indicated the presence of line items in association with zero allowed charges. (This might be due to the presence of re-processed claims in the "Comparison" file). To be considered "claims-active", a physician (UPIN) must have a line item count in the "Comparison" file greater than zero.

Physicians associated with at least one active Registry practice setting record and found to have one or more line items in the "Comparison" file (Registry-active, claims-active) were considered active. Physicians who were Registry-active but did not have any line item activity in the "Comparison" file (i.e., Registry-active but claims-inactive) were considered "inactive," or *de facto* inactive.

TABLE 4-9

NUMBER OF PRACTICE SETTINGS WITH AT LEAST ONE CHANGE, BY DATA ELEMENT: JANUARY 1994 - JANUARY 1995
(RESTRICTED TO ACTIVE PRACTICE SETTINGS IN ALL 5 QUARTERS)

Carrier Number	Carrier	Number of Practice Settings	Number of Changes								
					Sanction			Specialty		Licensure	
			Date of Birth	Date of Death	Code	Effective Date	Number of Years	Primary	Secondary	State Licensed In	License Number
00510	Alabama BC/BS	15,933	44	0	0	0	0	75	79	0	11,931
00520	Arkansas BC/BS, AR	10,670	2,267	0	0	0	0	263	248	0	5,312
00528	Arkansas BC/BS, LA	22,011	483	0	2	1	1	997	962	0	3,295
00542	California BS	107,714	21	0	24	19	19	1,152	18	22	19
00824	Colorado BC/BS	12,018	195	0	0	0	0	214	55	0	4,767
00570	Pennsylvania BS, DE	3,205	62	0	0	0	0	29	0	151	619
00580	Pennsylvania BS, DC	18,272	542	0	19	21	19	470	0	2,464	2,193
00590	Florida BC/BS	80,239	16,218	3	41	41	41	1,964	77	1	35,348
00621	Illinois BC/BS	58,591	5,565	0	54	64	47	1,984	1,534	28	3,662
00630	Indiana BC/BS	26,993	2,890	2	7	7	7	91	0	0	17,714
00640	Iowa BS	9,912	116	0	2	2	1	91	334	0	27
00650	Kansas BS, KS	6,948	102	1	0	0	12	93	3	53	535
00655	Kansas BS, NE	5,381	136	0	0	1	2	127	2	186	212
00660	Kentucky BC/BS	19,672	159	0	4	4	4	181	25	0	13,618
00901	Maryland Blue Shield	17,468	1,541	0	4	4	1	400	171	0	2,439
00700	C&S Administrative Services, MA	56,965	3,930	0	4	3	2	1,183	59	16	3,334
00623	Michigan BC/BS	1,516	18	0	0	0	0	12	0	0	36
00720	Minnesota BC/BS	10,472	522	0	4	4	4	295	4	51	8,020
00740	Kansas BS, MO	8,436	67	0	0	0	0	85	0	94	2,594
00751	Montana BC/BS	9	0	0	0	0	0	0	0	0	0
00760	C&S Administrative Services, NH	6,496	162	0	0	0	0	98	3	6	340
00781	C&S Administrative Services, VT	4,163	167	0	0	0	0	63	7	5	290
00801	Blue Shield of Western New York	19,538	1,657	0	7	7	8	562	0	0	1,882
00803	Empire BC/BS, NY	56,106	112	0	249	248	248	366	0	0	2,331
00820	North Dakota BC/BS, ND-SD	4,041	210	0	596	0	0	69	120	1	764
00825	North Dakota BC/BS, WY	1,145	24	0	0	0	0	10	16	0	26
00860	Pennsylvania BS, NJ	29,225	692	2	19	18	17	558	2	1,040	2,274
00865	Pennsylvania BS, PA	74,175	1,441	2	37	41	40	1,973	1	1,936	11,837
00870	Rhode Island Blue Shield	4,676	8	0	0	0	0	65	40	2	86
00880	South Carolina BC/BS	14,984	37	0	2	0	0	55	90	0	200
00900	Texas BC/BS	52,756	2,606	0	36	49	36	761	2	1	801
00910	Utah BC/BS	1,622	0	0	0	0	0	0	0	0	0
00951	Wisconsin Physician Service	16,330	97	0	0	0	0	156	0	0	76
00973	S.S.S., PR	10,950	35	0	0	0	0	169	105	2	7,648
00974	S.S.S., VI	8	1	0	0	0	0	0	0	0	1
01020	Aetna Life and Casualty, AK	1,578	12	0	0	0	0	63	98	5	256
01030	Aetna Life and Casualty, AZ	13,892	475	0	16	20	16	865	296	3	987
01040	Aetna Life and Casualty, GA	26,496	397	0	4	2	2	830	213	6	957
01120	Aetna Life and Casualty, HI	5,090	344	0	2	2	2	301	15	65	948
01290	Aetna Life and Casualty, NV	3,842	23	0	2	3	1	260	80	17	366
01360	Aetna Life and Casualty, NM	6,372	252	0	4	4	4	1,298	187	38	640
01370	Aetna Life and Casualty, OK	11,565	1,152	0	8	10	7	246	879	79	1,903
01380	Aetna Life and Casualty, OR	12,031	112	0	5	5	6	616	778	7	2,571
01390	Washington Physician Service	18,169	92	0	4	4	4	661	382	0	133
02050	Transamerica Occidental	102,053	1,890	0	8	8	7	2,012	11,775	1	57,062
05130	Equicor Life Assurance, ID	3,116	96	0	0	0	0	15	0	0	1,565
05440	Equicor Life Assurance, TN	27,904	94	0	5	5	5	204	0	1	12,132
05535	Prudential, NC	37,508	155	2	0	0	0	191	0	1	14,473
10072	Railroad Retirement Board	218,027	390	1	0	0	0	126	101	10	742
10074	Railroad Retirement Board	152,735	481	0	1	1	1	114	33	12	983
10230	Travelers Insurance Co., CT	12,551	1,590	0	0	0	0	331	280	8	4,300
10240	Travelers Insurance Co., MN	9,772	115	0	0	0	0	50	54	6	1,446
10250	Travelers Insurance Co., MS	6,536	240	0	3	3	3	360	38	6	921
10490	Travelers Insurance Co., VA	15,359	324	0	0	0	0	200	144	1	1,179
11260	Missouri General Am., MO	13,763	529	1	6	2	2	2,015	1,466	2	13,367
14330	Group Health Insurance, NY	8,349	130	0	17	12	12	94	23	3	3,912
16360	Nationwide Insurance Co., OH	59,182	1,161	0	14	24	14	1,271	0	7	754
16510	Nationwide Insurance, WV	10,646	132	0	5	14	9	208	0	35	395
21200	C&S Administrative Serv., ME	6,251	368	0	0	2	0	101	2	0	585
Totals (including Michigan & Empire)		1,571,427	52,681	14	1,215	655	604	27,043	20,801	6,372	266,808
	Share of Total Changes		3.1%	0.0%	0.1%	0.0%	0.0%	1.6%	1.2%	0.4%	15.9%
Totals (excluding Michigan & Empire)		1,513,805	52,551	14	966	407	356	26,665	20,801	6,372	264,441
	Share of Total Changes		3.1%	0.0%	0.1%	0.0%	0.0%	1.6%	1.2%	0.4%	15.8%

SOURCE: Health Economics Research, Inc. tabulations of January 1994, April 1994, July 1994, October 1994 and January 1995 Physician Registry files

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	Number of Changes																
	Schooling		Board Certification						Zip Codes					Name fields			
Carrier Number	Sch. Code	Graduation Year	Primary	Secondary	Credentials	Physician Status	Participation Status	Billing	Business	DRIP	Group Practice Indicator	Last	First	Middle	Suffix
00510	145	40	2,947	109	51	0	558	3,405	2,220	464	956	25	20	27	16
00520	358	300	1,268	238	35	0	711	823	882	80	57	70	143	85	12
00528	169	111	5,694	317	32	4	1,244	1,430	879	111	99	79	215	185	22
00542	41	36	0	14	1	0	4,846	5,624	5,615	0	109	237	83	130	12
00624	752	208	772	7	269	1	1,423	9,296	1,950	0	18	42	210	660	55
00570	92	68	700	421	4	0	321	2,743	2,757	0	1,080	1	16	9	0
00580	563	531	3,586	1,925	7	3	1,727	15,912	16,257	0	5,956	39	64	76	4
00590	5,145	4,319	5,205	121	29	3	8,213	34,224	19,736	16	549	422	612	1,023	711
00621	6,000	7,338	3,115	11,044	214	13	6,670	43,453	47,032	9	379	226	986	3,672	125
00630	3,652	3,439	0	1,209	98	0	718	8,842	4,513	1	7	82	85	413	202
00640	1,480	82	221	803	40	0	1,063	8,225	490	20	37	18	248	486	165
00650	258	205	306	5,473	19	3	350	3,797	3,513	6	1,999	9	306	376	52
00655	165	162	67	4,437	13	1	447	3,226	3,028	4	1,293	5	259	359	26
00660	94	94	88	13	2	0	1,004	7,701	4,319	0	602	17	704	1,249	129
00901	611	730	4	7	2	0	45	14,743	14,394	3	36	11	32	25	2
00700	3,811	3,796	0	0	27	0	1,277	19,541	19,543	55	36	102	71	63	38
00623	54	37	37	42	0	0	31	37	31	0	24	10	38	19	0
00720	1,305	690	99	1	77	0	4,018	688	387	20	1,427	23	79	93	76
00740	217	47	67	3,739	46	0	369	3,931	2,974	19	59	14	114	261	55
00751	0	0	0	0	0	0	0	4	1	0	0	0	0	0	0
00780	238	389	0	0	7	1	562	2,797	2,797	3	6	10	15	11	10
00781	206	283	0	0	35	0	378	1,492	1,492	0	1	9	10	10	6
00801	1,134	1,472	134	0	58	2	3,644	11,723	11,734	0	8,151	53	248	490	52
00803	63	59	25	707	168	0	783	1,718	1,765	1	27	182	130	80	313
00820	666	441	116	122	4	1	826	1,923	725	6	556	11	59	84	9
00825	80	60	1	23	4	1	131	817	53	2	27	3	13	13	2
00860	560	212	3,138	315	53	9	2,483	24,589	25,499	0	8,246	58	116	200	10
00865	2,420	1,345	11,118	5,540	178	4	6,550	63,686	64,583	0	22,823	83	432	208	16
00870	73	22	318	722	14	0	498	222	105	0	4	4	23	40	27
00880	30	117	80	25	0	0	342	1,211	296	84	40	7	105	40	47
00900	3,320	3,471	641	3	35	3	3,351	11,747	10,958	13	43	239	660	1,021	144
00910	0	0	0	0	0	0	0	0	0	0	0	3	3	3	2
00951	75	3,420	84	4,547	6	0	2,128	6,563	6,370	7	2,596	33	167	307	12
00973	30	62	2	0	1	0	542	4,566	3,671	1	200	25	87	108	0
00974	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0
01020	81	72	89	102	3	0	171	794	980	0	2	6	12	24	7
01030	523	502	640	291	10	0	1,322	5,019	5,728	1	13	73	141	379	93
01040	428	410	199	159	31	5	1,219	8,007	9,122	0	92	10	403	404	293
01120	99	92	99	23	1	0	693	2,538	3,573	0	220	14	52	103	10
01290	50	21	108	43	3	0	324	1,581	2,130	1	68	24	43	145	37
01360	405	380	88	76	0	0	476	2,287	2,081	2	31	23	27	89	4
01370	1,054	1,061	196	227	189	0	1,804	4,862	5,771	14	894	32	102	536	26
01380	391	286	668	775	10	0	1,373	5,029	6,497	0	63	60	80	139	78
01390	2,030	2,018	2,069	12,171	18	3	1,247	6,858	6,190	11	1,510	86	374	1,168	11,990
02050	2,556	14,598	7,145	21,240	124	23	2,987	38,775	20,724	2	7,461	525	1,766	1,808	312
05130	101	97	1	31	1	0	350	884	520	0	1	3	21	56	0
05440	503	62	2	777	1	1	1,421	6,776	1,931	3	50	32	89	175	44
05535	146	996	0	401	1	0	1,247	8,053	3,317	2	30	18	141	199	25
10072	461	358	136	90	5	0	92	1,232	794	0	279	398	405	388	93
10074	554	550	120	32	12	0	179	1,825	1,380	6	426	535	620	500	116
10230	2,561	2,184	94	279	2	0	1,719	643	586	0	143	10	50	76	785
10240	631	484	2	53	1	0	824	1,715	689	0	55	37	19	32	2
10250	366	484	5	34	15	0	1,277	888	500	2	61	2	31	20	16
10490	597	490	112	138	4	2	1,136	711	385	13	498	37	105	154	66
11260	544	543	3,598	1,708	88	6	2,705	11,160	12,522	205	698	97	474	1,234	249
14330	111	86	1,056	79	68	3	828	3,145	1,839	41	171	8	211	523	12
16360	2,621	3,233	161	356	44	0	9,034	9,243	13,320	9	302	125	349	760	73
16510	264	166	28	67	8	0	1,033	1,420	1,776	0	109	21	91	139	10
21200	382	394	0	0	2	0	371	3,024	3,024	0	1	21	12	12	13
	51,266	63,066	56,486	81,131	2,196	92	91,086	447,169	385,959	1,237	70,621	4,349	11,974	20,891	16,706
	3.1%	3.8%	3.4%	4.8%	0.1%	0.0%	5.4%	26.6%	23.0%	0.1%	4.2%	0.3%	0.7%	1.2%	1.0%
	51,149	62,970	56,424	80,382	2,028	92	90,272	445,414	384,163	1,236	70,570	4,157	11,806	20,792	16,393
	3.1%	3.8%	3.4%	4.8%	0.1%	0.0%	5.4%	26.7%	23.0%	0.1%	4.2%	0.2%	0.7%	1.2%	1.0%

4.2.2 Claim Activity Status by Carrier

Comparisons between the 1993 "Comparison" file and the Registry file were performed at the UPIN/carrier level. The distribution of Registry-active physicians without any line item activity by carrier is presented in Table 4-10. Of the nearly 1.1 million distinct carrier/UPIN combinations, 36 percent were inactive.

The two RRB[15] carriers had 29 percent of the total inactive physicians (28 percent of "total distinct UPINs"), while North Dakota BC/BS (Wyoming) had about one-tenth of one percent of the total inactive carrier/UPIN combinations. The RRB carriers have a large share of the inactive physicians simply because they service claims from physicians across the entire country as indicated by the 305 thousand distinct UPINs that they service. Note that the proportion of RRB physicians that are inactive is only slightly higher than the national average of 36 percent.

Nine carriers had claim inactivity rates above 40 percent, and 11 carriers had inactive rates of less than 30 percent. California BS had the highest percentage of inactive physicians among all carriers, 51.4 percent, while Kansas BS (Nebraska) had the lowest inactivity rate, about 24 percent.

The two carriers with the highest percentage of inactive physicians, California BS and Minnesota BC/BS, are no longer Medicare Part B carriers. Excluding these two carriers, Group Health Insurance and Empire Blue Cross/Blue Shield, two of the carriers servicing the state of New York, had the highest percentage of "Registry-active" physicians with no claims activity. Surprisingly, the third New York carrier, Blue Shield of Western New York, had one of the lowest claim inactivity rates at nearly 29 percent.

There does not appear to be a relationship between the *de facto* inactives (high-rate carriers) and the low deactivation rates on Table 4-5. Some of the top of this list are high-HMO-penetration areas, which would contribute, perhaps, to high rates of *de facto* inactives. Alaska has very few Medicare beneficiaries. South Carolina had a big "purge" after 1993. There's less variation here than on many of the previous tables.

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[15] The claims of the two Railroad Retirement Board processing centers were represented in the "Comparison" file with a carrier code of "10071" instead of their actual codes.

TABLE 4-10

CLAIMS ACTIVITY STATUS OF REGISTRY-ACTIVE PHYSICIANS (UPINs) BY CARRIER

Number	Carrier Name	Total Distinct Carrier/UPIN Combinations Active in Registry	NO CLAIMS ACTIVITY Count	Percent
00542	California BS	61,073	31,368	51.4 %
00720	Minnesota BC/BS	5,710	2,716	47.6
14330	Group Health Insurance, NY	6,783	3,051	45.0
00803	Empire BC/BS, NY	49,851	22,091	44.3
00880	South Carolina BC/BS	9,607	4,159	43.3
01020	Aetna Life and Casualty, AK	1,488	621	41.7
02050	Transamerica Occidental	48,344	20,077	41.5
16510	Nationwide Insurance, WV	5,787	2,339	40.4
05535	Prudential, NC	19,596	7,849	40.1
00870	Rhode Island Blue Shield	3,594	1,404	39.1
00700	C&S Administrative Services, MA	28,725	11,072	38.5
00710	Michigan BC/BS	27,533	10,541	38.3
00951	Wisconsin Physician Service	14,859	5,552	37.4
10071	Railroad Retirement Board	305,010	113,440	37.2
00640	Iowa BS	8,137	3,025	37.2
00520	Arkansas BC/BS, AR	6,328	2,350	37.1
00621	Illinois BC/BS	33,856	12,204	36.0
21200	C&S Administrative Serv.,ME	4,078	1,444	35.4
00973	S.S.S., PR*	7,155	2,523	35.3
00820	North Dakota BC/BS, ND-SD	3,710	1,308	35.3
00650	Kansas BS, KS	4,843	1,685	34.8
00825	North Dakota BC/BS, WY	1,257	437	34.8
01360	Aetna Life and Casualty, NM	4,070	1,409	34.6
16360	Nationwide Insurance Co., OH	31,293	10,814	34.6
05440	Equicor Life Assurance, TN	14,304	4,915	34.4
00780	C&S Administrative Services, NH*	5,763	1,935	33.6
01370	Aetna Life and Casualty, OK	7,691	2,558	33.3
10240	Travelers Insurance Co., MN	9,619	3,195	33.2
00660	Kentucky BC/BS	9,563	3,170	33.1
01120	Aetna Life and Casualty, HI	3,543	1,168	33.0
00510	Alabama BC/BS	10,340	3,398	32.9
01030	Aetna Life and Casualty, AZ	10,301	3,374	32.8
00865	Pennsylvania BS, PA	42,979	14,044	32.7
11260	Missouri General Am. , MO	11,165	3,639	32.6
00751	Montana BC/BS	2,380	769	32.3
01380	Aetna Life and Casualty, OR	8,862	2,862	32.3
00740	Kansas BS, MO	5,400	1,727	32.0
00580	Pennsylvania BS, DC	11,168	3,538	31.7
00590	Florida BC/BS	40,874	12,946	31.7

TABLE 4-10 (continued)

CLAIMS ACTIVITY STATUS OF REGISTRY-ACTIVE PHYSICIANS (UPINs) BY CARRIER

Number	Carrier Name	Total Distinct Carrier/UPIN Combinations Active in Registry	No Claims Activity Count	No Claims Activity Percent
00550	Colorado BC/BS	9,713	3,049	31.4 %
00570	Pennsylvania BS, DE	1,852	581	31.4
10230	Travelers Insurance Co., CT	11,256	3,498	31.1
00528	Arkansas BC/BS, LA	10,618	3,251	30.6
00910	Utah BC/BS	3,973	1,204	30.3
00900	Texas BC/BS	40,072	12,116	30.2
01040	Aetna Life and Casualty, GA	15,799	4,719	29.9
00630	Indiana BC/BS	14,402	4,189	29.1
00801	Blue Shield of Western New York	14,869	4,288	28.8
05130	Equicor Life Assurance, ID	2,216	629	28.4
10250	Travelers Insurance Co., MS	4,823	1,350	28.0
00860	Pennsylvania BS, NJ	22,199	6,013	27.1
10490	Travelers Insurance Co., VA	12,159	3,182	26.2
01290	Aetna Life and Casualty, NV	2,984	777	26.0
00932	Washington Physician Service**	13,874	3,603	26.0
00690	Maryland Blue Shield	10,377	2,594	25.0
00655	Kansas BS, NE	3,716	906	24.4
	Total (including RRB)	**1,081,541**	**392,666**	**36.3**
	Total (excluding RRB)	**776,531**	**279,226**	**36.0**

NOTES:

* C&S Administrative Services VT (ID# 00781) was combined with C&S Administrative Services NH (00780) and S.S.S. VI (00974) was combined with S.S.S. PR (00973).

** Aetna Insurance became Washington's carrier effective January 1, 1994.

SOURCE: 1993 UPIN/MPIER Comparison File and April 1994 Registry file.

4.2.3 Claim Activity Status by Physician Characteristics

Before analyzing claims activity status by physician characteristics, each Registry characteristic was edited according to the feasibility rules presented in Table 4-11.[16] Selected characteristics include physician specialty, sanction status, credentials, age of physician, practice setting, date-of-death, and carrier's geographic region. Because of the poor quality of RRB- maintained data, practice settings associated with the RRB carriers were only used if there was not an active practice setting elsewhere. Unlike the previous section, this analysis (and the subsequent section) are conducted at the UPIN level rather than for carrier/UPIN combinations; hence, the lower total number of UPINs tabulated for this analysis.

4.2.3.1 Claim Activity Status by Specialty

Claims activity associated with Registry-active UPINs for each physician specialty is shown in Table 4-12. Collectively, nearly 30 percent of Registry-active physicians did not have claims activity. (Note, in 1992, HCFA changed the regulations for reporting physician specialty codes. Due to several carriers' non-compliance with these regulations, additional specialty categories were included in the analysis).

As expected, family practitioners, general practitioners and internal medicine physicians comprised nearly 27 percent of the total physicians and about 30 percent of the total active physicians. Of the total inactive physicians, 23 percent were accounted for by practitioners of chiropractic medicine. Further, chiropractic medicine and oral surgery (dentists only) specialties accounted for more than 40 percent of the total inactive physicians.

Chiropractors had the highest percent of Registry-active physicians with no claims activity, nearly 98 percent, while surgical oncologists had less than two percent inactive rate. Six specialties – rheumatology, vascular surgery, cardiac surgery, surgical oncology, radiation oncology, and interventional radiology – had less than a five percent inactive rate. These results can be explained on the basis of the needs of certain types of populations (disabled, elderly) and frequency of treatments for these particular specialties. For example, the risk of

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[16] Header information was used if it satisfied all the feasibility checks. If the header information did not pass the feasibility checks, practice setting information was then used, starting with the most recently added practice setting to the Registry. The *header* refers to a portion of the Registry record for each physician. It includes information that should not vary by practice setting, such as date of birth. The header does not include data elements that might vary by practice setting, such as state license number and specialty.

TABLE 4-11

FEASIBILITY RULES FOR PHYSICIAN CHARACTERISTICS

Physician Characteristic	Feasible	Not Feasible
1. Birth Year		
A. Value is 14 ≤ year ≤ 69	X	
B. Any other value		X
2. Date of Death		
A. Value is 1/1/93 ≤ date ≤ 4/1/94 or blank	X	
B. Any other value		X
3. Sanction Status		
A. Value = blank, A-R, or U	X	
B. Any other value		X
4. State licensed in (used for classifying by region)		
A. Value = valid postal code (2 letter abbreviation)	X	
B. Any other value		X
5. Credentials		
A. Value = MD, DO, DDS, DDM, DPM, CH, or OD	X	
B. Any other value		X
6. Specialty		
A. Value = 01-41, 44, 46, 48, 49, 66, 70, 76-79, 81-86, 90-94 or 99	X	
B. Any other value		X
7. Group Practice		
A. Value = 1 or 4	X	
B. Any other value		X

SOURCE: Health Economics Research, Inc.

TABLE 4-12

CLAIMS ACTIVITY STATUS OF REGISTRY-ACTIVE PHYSICIANS (UPINs) BY PHYSICIAN SPECIALTY

Specialty	CLAIMS ACTIVITY STATUS Active	Inactive	Total	Percent of Characteristic Inactive
01 General Practice	29,253	16,297	45,550	35.8 %
02 General Surgery	22,668	6,336	29,004	21.8
03 Allergy/Immunology	2,504	438	2,942	14.9
04 Otolaryngology	7,245	1,171	8,416	13.9
05 Anesthesiology	24,761	4,158	28,919	14.4
06 Cardiology	15,193	1,466	16,659	8.8
07 Dermatology	6,891	856	7,747	11.0
08 Family Practice	50,275	8,154	58,429	14.0
09 Gynecology (Osteo)	66	27	93	29.0
10 Gastroenterology	6,381	402	6,783	5.9
11 Internal Medicine	65,252	13,988	79,240	17.7
12 Osteo. Manipulative Therapy	498	248	746	33.2
13 Neurology	8,171	1,069	9,240	11.6
14 Neurosurgery	3,514	511	4,025	12.7
15 Obstetrics (Osteo)	19	8	27	29.6
16 Obstetrics/Gynecology	27,436	5,536	32,972	16.8
17 Ear, Nose, Throat (Osteo)	69	29	98	29.6
18 Ophthalmology	14,855	2,024	16,879	12.0
19 Oral Surgery (Dentists only)	6,830	35,691	42,521	83.9
20 Orthopedic Surgery	17,188	2,062	19,250	10.7
21 Path. Anat., Clinical Pathology (Osteo)	32	7	39	17.9
22 Pathology	9,616	3,155	12,771	24.7
23 Peripheral Vascular Disease (Osteo)	46	29	75	38.7
24 Plastic and Reconstructive Surgery	4,204	476	4,680	10.2
25 Physical Medicine and Rehabilitation	3,852	665	4,517	14.7
26 Psychiatry	27,363	9,079	36,442	24.9
27 Psychiatry, Neurology (Osteo)	38	14	52	26.9
28 Colorectal Surgery	648	132	780	16.9
29 Pulmonary Disease	5,352	430	5,782	7.4
30 Diagnostic Radiology	22,782	3,408	26,190	13.0
31 Roentgenology,Radiology (Osteo)	42	14	56	25.0
32 Radiation Therapy (Osteo)	98	11	109	10.1
33 Thoracic Surgery	3,011	505	3,516	14.4
34 Urology	7,995	1,208	9,203	13.1
35 Chiropractic	1,157	47,725	48,882	97.6
36 Nuclear Medicine	531	106	637	16.6
37 Pediatric Medicine	9,577	20,287	29,864	67.9
38 Geriatric Medicine	635	78	713	10.9
39 Nephrology	3,113	231	3,344	6.9
40 Hand Surgery	389	24	413	5.8
41 Optometry	21,680	7,156	28,836	24.8
44 Infectious Disease	1,652	140	1,792	7.8

TABLE 4-12 (continued)

CLAIMS ACTIVITY STATUS OF REGISTRY-ACTIVE PHYSICIANS (UPINs) BY PHYSICIAN SPECIALTY

Specialty	CLAIMS ACTIVITY STATUS Active	Inactive	Total	Percent of Characteristic Inactive
46 Endocrinology	1,592	132	1,724	7.7 %
48 Podiatry	13,348	2,555	15,903	16.1
49 Ambulatory Surgical Center (Miscellaneous before May 1992)	522	333	855	38.9
66 Rheumatology	1,716	60	1,776	3.4
70 Clinic/Other Grp Practice, except GPPP	9,926	5,660	15,586	36.3
76 Peripheral Vascular Disease	110	14	124	11.3
77 Vascular Surgery	823	21	844	2.5
78 Cardiac Surgery	770	22	792	2.8
79 Addiction Medicine	116	18	134	13.4
81 Critical Care (Intensivists)	416	70	486	14.4
82 Hematology	286	20	306	6.5
83 Hematology/Oncology	2,809	160	2,969	5.4
84 Preventive Medicine	143	72	215	33.5
85 Maxillofacial Surgery	773	72	845	8.5
86 Neuropsychiatry	153	31	184	16.8
90 Medical Oncology	851	59	910	6.5
91 Surgical Oncology	228	4	232	1.7
92 Radiation Oncology	1,383	72	1,455	4.9
93 Emergency Medicine	13,426	1,121	14,547	7.7
94 Interventional Radiology	224	5	229	2.2
99 Unknown Physician Specialty	80	269	349	77.1
Total	**482,577**	**206,121**	**688,698**	

NOTE: Claims activity is defined on the basis of the number of line items.

SOURCE: 1993 UPIN/MPIER comparison file and April 1994 Registry file.

developing a heart condition increases as people age, thus increasing the elderlys' need for services rendered by cardiac or vascular surgeons. Radiological services also usually require frequent visits to a specialist and long-term courses of treatment.

Even though they have lower than average inactive rates, the rates for radiologists, anesthesiologists, and pathologists should probably be lower. In situations such as hospital x-ray departments where there is high volume, it is difficult for the staff to correctly attribute x-rays to the appropriate radiologists. The staff often use just one PIN of one radiologist for billing purposes. Although carriers are aware of this problem, their attempts to get the problem permanently rectified has met with repeated failure.

4.2.3.2 Claim Activity Status by Other Physician Characteristics

The claims-activity status by other physician characteristics are shown in Table 4-13. About two tenths of one percent of all physicians were sanctioned by Medicare, of which 77 percent were inactive. Of the physicians not sanctioned by Medicare, nearly 30 percent were inactive.

Medical doctors comprised 87 percent of the total active physicians and about 53 percent of the total inactive physicians, while chiropractors comprised less than three tenths of one percent of the total active physicians but more than 23 percent of the total inactive physicians. Further, chiropractors had the highest inactive rate at nearly 98 percent, followed by doctors of dental surgery and doctors of dental medicine at about 83 and 82 percent respectively. One possible explanation for these results might be that dentists and chiropractors infrequently submit bills on behalf of Medicare beneficiaries due to the limited dental and chiropractic[17] services covered by Medicare.

Physicians aged 45-54 had the lowest inactive rate of 22 percent. Physicians 65 and older had the highest inactive rate, about 50 percent. This is likely due to physicians in this category retiring or semi-retiring, in most cases from general practice, family practice and internal medicine.

Physicians in solo practices are more than two times as likely to be inactive than physicians in group practices (about 40 percent versus 19 percent). One possible explanation

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[17] Currently, Medicare will only reimburse chiropractors for one HCPC code.

TABLE 4-13

CLAIMS ACTIVITY STATUS OF REGISTRY-ACTIVE PHYSICIANS (UPINs)
BY OTHER PHYSICIAN CHARACTERISTICS

	CLAIMS ACTIVITY STATUS			Percent of Characteristic
	Active	Inactive	Total	Inactive
Total	482,577	206,121	688,698	29.9 %
Sanction Status				
NO	482,179	204,748	686,927	29.8
YES	398	1,373	1,771	77.5
Credentials				
Medical Doctor	417,645	108,534	526,179	20.6
Doctor of Optometry	21,847	7,316	29,163	25.1
Doctor of Osteopath	20,853	3,700	24,553	15.1
Podiatrist	13,496	2,575	16,071	16.0
Doctor of Dental Surgery	6,105	29,609	35,714	82.9
Doctor of Dental Medicine	1,509	6,682	8,191	81.6
Chiropractor	1,122	47,705	48,827	97.7
Age				
Not feasible*	37,084	32,525	69,609	46.7
Less than 35	56,735	27,678	84,413	32.8
35-44	171,861	54,736	226,597	24.2
45-54	116,918	33,088	150,006	22.1
55-64	64,851	22,813	87,664	26.0
65 or older	35,128	35,281	70,409	50.1
Practice Setting				
Group	257,593	59,722	317,315	18.8
Solo	223,737	145,106	368,843	39.3
Not feasible	1,247	1,293	2,540	50.9
Date of Death				
Feasible[1]	482,363	202,374	684,737	29.6
Not feasible	214	3,747	3,961	94.6
Region				
New England	32,428	14,528	46,956	30.9
Middle Atlantic	83,784	38,602	122,386	31.5
South Atlantic	83,222	30,912	114,134	27.1
East South Central	24,949	7,811	32,760	23.8
East North Central	77,961	33,068	111,029	29.8
West South Central	43,971	17,021	60,992	27.9
West North Central	32,386	13,871	46,257	30.0
Mountain	24,753	9,151	33,904	27.0
Pacific	74,461	38,869	113,330	34.3
Miscellaneous**	4,662	2,288	6,950	32.9

NOTE Claims activity is defined on the basis of the number of line items

* Includes missing dates of birth.

** Includes Guam, Virgin Islands, and Puerto Rico

[1] Includes living and deceased physicians

SOURCE 1993 UPIN/MPIER Comparison File and April 1994 Registry File

for this result may be that many solo practices are operated by general practice, family practice, or internal medicine physicians who are traditionally older than other types of practitioners.

Physicians with a feasible date of death had an inactive rate of 30 percent, while nearly 95 percent of physicians with non-feasible dates of death were inactive. Of all the regions where physicians are practicing, the Pacific region had the highest rate of inactive physicians at greater than 34 percent and the East South Central region had the lowest rate at nearly 24 percent.

4.3 Summary

Key Findings

- There were a considerable number of changes made to Registry data during 1994:
  - nearly 44 percent of the practice settings had at least one change made to it;
  - more than 80 percent of the practice settings for six carriers had at least one change;
  - of the nearly 1.6 million practice settings that remained active throughout 1994, 43.7 percent had at least one change;
  - of the nearly 312,000 practice settings newly added during 1994, 37 percent had at least once subsequent change;
  - of the 103,874 practice settings de-activated during 1994, 71.5 percent had at least one change prior to, and aside from, de-activation; and
  - the number of practice settings changed or added seemed unusually high for Empire BC/BS, Montana BC/BS, Utah BC/BS and the carrier for Michigan.
- The total number of changes to individual data elements was quite large during 1994:
  - there were 4.9 million total changes;
  - nearly half of 4.9 million changes, however, were due to just two carriers: Empire BC/BS and the carrier for Michigan;

- of the remaining 2.5 million changes:
    - TOLIC had the most with 249,000 followed by Pennsylvania BS with 233,000 (both of these carriers have a large number of physicians); and
    - the billing and business zip codes together with the state license number accounted for 55.5 percent of the changes.
- The data elements that had the fewest changes were date of death, the three sanction variables, credentials, physician status, and the physicians' last name.

- When restricted to the practice settings that remained active throughout 1994 and excluding Empire BC/BS and Michigan, there were 1.7 million total changes to the data elements.
    - Once again TOLIC and Pennsylvania BS had the most changes;
    - the billing and business zip codes together with the state license number accounted for nearly two-thirds of the changes; and
    - the data elements that had the fewest changes were date of death, the three sanction variables, credentials, physician status, DRIP status, and the physicians' last name.
- Of the nearly 1.1 million distinct carrier/UPIN combinations that had active practice settings on the Registry, about 36 percent were inactive (no claims activity). (Physicians that have practices in more than one state can have more than one carrier, and most of the RRB records are for physicians associated with non-RRB carriers.)
- Nine carriers had over 40 percent of their Registry-active physicians but without claims activity – California BS had the highest rate with 51.4 percent.
- Of the nearly 690,000 Registry-active physicians (excluding RRB carriers from the tabulations), nearly 30 percent did not have claims activity.
    - Of the physicians with no claims activity, chiropractors and oral surgeons accounted for more than 40 percent.
    - Nearly 98 percent of the chiropractors had no claims activity, a result apparently due to Medicare restrictions on services which can be provided by chiropractors.
    - About 77 percent of physicians sanctioned by Medicare did not have claims activity.

- About 50 percent of the physicians 65 years old or older did not have claims activity compared to 22 percent of physicians aged 45-54.

- Solo practitioners are about twice as likely to have no claims activity than physicians belonging to group practices.

Discussion

The tremendously high volume of changes to Registry data during 1994 is one explanation for erroneous values of Registry data elements and for discrepancies during comparisons of data elements common to the Registry and NCH claims data. Erroneous values can easily arise if carriers are under-staffed, particularly in the absence of extensive, routine editing of changes to data. While some of the high volume of changes, state license numbers in particular, can be attributed to BPO directives to carriers to correct their data, the total number of changes still seems very high.

With about 30 percent of physicians with active Registry practice settings but no claims activity, it is quite easy to understand why some data elements on the Registry might not be up-to-date. Indeed, it is possible that many more setting records should have been deactivated in 1993, in light of the very low number of deactivations we found for some carriers. Some types of physicians (e.g., chiropractors) might not be very responsive to carrier requests for up-to-date information because they have such low claims activity and, thus, have little financial incentive to respond. It is likely that physicians need more incentives to report separations from practices to balance existing incentives to report new affiliations.

The analyses of *de facto* inactive physicians were performed using 1993 claims data. Since then, in October 1994, BPO revised the *Medicare Carriers Manual* to instruct carriers to de-activate Registry practice settings if there had not been any associated claims activity during the preceding three years. While this revision might reduce the percentage of Registry-active physicians without claims activity, it could cause other problems for the carriers. Specifically, some HMOs have required their physicians to obtain UPINs in order to facilitate the processing of occasional fee-for-service claims.[18] Since many individual HMO physicians rarely provide services to a Medicare beneficiary on a fee-for-service basis, these physicians or their HMO may complain to the carriers if the carriers require new applications to re-activate

[18]Op. Cit. *Carrier Analysis.*

practice settings. Additionally, some state Medicaid programs will not issue a Medicaid provider number unless the physician already has a Medicare provider number. BPO's standards, thus, could also cause provider-relation problems for the carriers, especially in the case of pediatricians.

5.0 USING CARRIER-SUPPLIED DATA TO VALIDATE REGISTRY AND NCH CLAIMS DATA

The results presented in the previous chapters in this report and in other reports prepared by Health Economics Research, Inc. (HER) for HCFA have uncovered a series of problems with Physician Registry data. Among the problems are (1) the presence of erroneous and inconsistent data in the Registry, (2) inability to match, via PINs, National Claims History (NCH) claims to specific Registry practice settings, and (3) inconsistencies in the coding of similar data elements between the Registry and NCH claims data. These problems give rise to questions regarding the overall integrity and quality of Registry and NCH data and, when they are inconsistent with each other, which data should be used. The fact that data from some carriers have problems may lead analysts and investigators to have concerns about the quality of data from other carriers that appear to have no problems.

Since the previous studies of Registry and NCH claims data were, essentially, self-validation studies, HCFA wanted to use another set of data to validate Registry and NCH claims data. Since carriers are the source of both Registry and NCH claims data, the seven carriers[1] that were the subject of case studies for Chapter 4 of the *Interim Report* were each asked to provide (1) a complete PIN-to-UPIN crosswalk and (2) total allowed charges, group practice affiliation, and Medicare participation status for a sample of physicians. Also because the carriers are the source of both Registry and NCH claims data, it was HCFA's hope that the carrier-supplied data would prove to be a "gold" standard for the data comparisons.

One of HCFA's continuing concerns is the existence and rationale for physicians with high annual Medicare volume and allowed charges (greater than one million dollars in total). Little is known about the circumstances under which such high billings arise. To support an investigation of high-volume physicians, each carrier was also asked to collect data and forward it to HER.

Since not all of the carriers complied with the data requests, the data collection effort is recounted in the next sections. The results of the validation studies are presented in subsequent sections.

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[1]Xact Medicare Services (Pennsylvania), Arkansas BC/BS (Arkansas), C & S Administrative Services (Massachusetts), MetraHealth (Mississippi), California BS (Northern California), Alabama BC/BS and Aetna (Georgia).

5.1 Data Collection

In arranging the carrier contacts for the case studies, the carriers were informed that, as part of HER's contract with HCFA, data that they maintained would be requested in order to compare it to both Registry and NCH claims data. With one exception (C & S Administrative Services), carriers were informed about the data request both during HER's initial telephone contact with them and in a follow-up letter. The follow-up confirmation letter indicated the type of data that HCFA and HER were requesting. The following is a typical example of the data request:

- From carriers which report completing the assignment of unique PINs to all physicians by January 1991, [provide] a machine-readable list [crosswalk] showing each individual physician's UPIN and all billing PIN (or PINs) for that individual which are used on Medicare claims forwarded to HCFA. This requests assumes that the physician has individual billing PINs that are used only by that individual.

- For a sample of 625 physicians, total Medicare reimbursements, total allowed charges (or some other measure of volume) during 1993;

- For a sample of 625 physicians, group practice affiliation (or other similar indicator) for each of their practice settings in 1994; and

- For a sample of 625 physicians, the Medicare participation status for each of their practice settings in 1994.

- Investigate a sample of five high volume physicians (supplied by HCFA), using an analysis plan which HER is currently designing.

As shown above, the request clearly indicated that the data provided by the carrier was to be for calendar year 1993 services in the case of allowed charges, and calendar year 1994 status in the case of participation status and group practice status. With the exception of the number of physicians in each sample (second through fourth bullets), the wording of the request was identical for all carriers.

The physician sample for the second through fourth bullets was drawn by HER from the 1993 Part B Physician Sample (Final Action Form). Total allowed charges for each of these sample physicians was greater than zero. Each of the five high-volume physicians (fifth bullet) supplied by HCFA had total allowed charges greater than one million dollars in 1994.

The actual data request was sent to a carrier after its case study discussions had been completed. Enclosed with the data request letter was a diskette containing files that supplied the physician's name, UPIN, and PIN for whom the data was requested. HER requested that the carriers supply their results in machine-readable form and that they provide file-layout documentation for each of the electronic files they submitted. Instructions for collecting data for the high-volume physician analysis were enclosed with the data request. The carriers were also reminded that their cooperation in this endeavor was voluntary.

The carriers found various parts of the request difficult to fulfill. Only Xact Medicare Services (a.k.a. Pennsylvania BS) and Arkansas BC/BS initially responded favorably to HER's request. But Xact did not supply the PIN-to-UPIN crosswalk (first bullet) for all billing physicians (only the sample), nor did they supply the sample validation data for the entire sample. Arkansas BC/BS attempted to supply only a small part of the high-volume physician data, but this did not turn out to be useful. Arkansas BC/BS did not provide any other parts of the requested information.

After considerable efforts to contact the responsible individuals at the carriers, it was eventually established that the rest of the carriers would not respond to the data request because it was not mandatory for them to do so. HCFA regional officers then informed the carriers that funds might be available provided that the requested additional monies were reasonable. After the submission and re-submission of budgets from the carriers, HCFA issued data collection contracts to C & S Administrative Services (Massachusetts), MetraHealth (Mississippi), California BS, and Alabama BC/BS. Only C & S Administrative Services and Alabama BC/BS agreed to supply data on high-volume physicians in addition to the other requested data. The other carriers cited the lack of available personnel to perform some of the sub-tasks of the high-volume physician analysis (e.g., contacting physician offices to obtain non-physician staffing). The process of requesting the data, negotiating the financial terms of the data collection contracts, and the actual receipt of the data took about five months.

We weren't able to ascertain whether California BS provided all of the data they agreed to forward. We used the data we could find; subsequent tables and discussion will indicate where parts of the total request were missing. Perhaps the problems we had with the California data stemmed from the complex files and formats they sent, which were provided with limited documentation.

Aetna (Georgia) considered responding to the data request but, apparently, decided against it once they learned about the details of the component on the high-volume physician analysis. Arkansas BC/BS was very reluctant to continue without additional funding. The securing of funding was not pursued by HCFA or its Regional Office.

5.2 Finding Missing UPINs for NCH Claims

In both the *Interim Report* and Chapter 3 of this report (Table 3-12), it was determined that some PINs in the NCH claims data could not be found in the Registry. This raises concerns about the integrity of NCH claims data. Of primary concern is whether, in such cases, the performing UPIN that has been attached to a claim (line item) is, in fact, the true UPIN associated with the billing PIN. A related concern is whether some NCH claims currently without a performing UPIN should indeed have one. To determine the extent to which NCH claims (line items) currently without performing UPINs should have performing UPINs, a complete PIN-to-UPIN crosswalk was requested from each of the participating carriers.

Accordingly, PINs for line items without UPINs in the 1993 5% NCH Beneficiary Sample Standard Analytic File were compared to the PINs in the carrier-supplied crosswalk. A successful performing UPIN "find" was tallied if a PIN match was found between the NCH data and the crosswalk file *and* the crosswalk file also contained an UPIN for the matching PIN.

The successful performing UPIN find rate ranged from 6.1 percent to 92.7 percent (Table 5-1). The high UPIN find rate for Alabama BC/BS can be partly attributed to the low number of NCH line items without a performing UPIN. The low number of line items without a performing UPIN is puzzling, because supplier claims should make up a large fraction of the data file, and suppliers ordinarily do not have UPINs. The next highest UPIN find rate was for C & S Administrative Services at 12.7 percent. In considering the results for C & S, California BS, and MetraHealth,[2] it should be noted that the NCH data include line items submitted by suppliers and other non-physicians and, thus, should not have a performing UPIN. This suggests the possibility that the line items without UPINs for C & S, California BS, and Travelers were *not* mostly submitted by suppliers and other non-physicians.

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[2]Travelers Insurance Company was the carrier for Mississippi during 1993.

TABLE 5-1

USING CARRIER-SUPPLIED CROSSWALK FILES TO FIND MISSING UPINs FOR 1993 NCH LINE ITEMS

CARRIER		Total Line Items Missing UPIN in NCH[a]	Number of Line Items for Which UPINs Found In Crosswalk	Percent
Number	Name			
00510	Alabama BC/BS	110	102	92.7 %
00542	California BS	606,993	36,808	6.1
00700	C&S Administrative Services, MA	340,043	43,079	12.7
10250	MetraHealth, MS[b]	77,025	4,831	6.3

NOTE: [a]Some line items without UPINs were submitted by non-physicians and suppliers and thus should not have a UPIN.
[b]Travelers Insurance Company was the carrier for Mississippi during 1993.

SOURCE: Health Economics Research, Inc. tabulations based on carrier-supplied PIN-to-UPIN crosswalk files and 1993 5% Beneficiary Sample Standard Analytic File.

5.3 Consistency of Registry and NCH Claims Data with Carrier-Maintained Data

As a method of external-source data validation, carrier-supplied allowed charges, Medicare participation status, and the group practice indicator are compared to their counterparts in NCH claims and Registry data in this section. Unlike the carrier-supplied PIN-to-UPIN crosswalk used in the previous section, only a sample of physicians present in the 1993 Part B Physician Sample (Final Action Form) for each carrier were selected for these analyses.

5.3.1 Allowed Charges

In the previous section it was found that NCH claims data contains line items without performing UPINs when, in fact, they should be present. This result suggests that tabulations of allowed charges by performing UPIN using NCH data may be less than the actual total allowed charges.[3] To determine the extent of discrepancies, if any, total allowed charges for each of the sample physicians was requested from the carriers. The underlying premise of requesting carrier-produced values is that carriers should have more accurate data than available in the NCH. As previously noted, total allowed charges for each sample physician was greater than zero. Since researchers typically won't have carrier-provided crosswalks to assign UPINs to line items without performing UPINs, the crosswalks used in the previous section were not used for this analysis.

Before examining the differences in allowed charges by carrier, it is important to note that only C & S Administrative Services provided HER with allowed charges for all of the UPINs HER sent to C & S. Alabama BC/BS and MetraHealth (Mississippi) supplied allowed charges for all but five (each) of the UPINs sent to them. HER was only able to recover allowed charges for 397 of the 694 UPINs sent to California BS and for 330 of the 624 UPINs sent to Pennsylvania BS. For some unknown reason, Pennsylvania BS substituted group UPINs for about half of the UPINs sent to them. Since group UPINs were not issued until 1995 and 1993 allowed charges were being compared, Pennsylvania BS's substitution does not make sense. Instead of attaching the performing UPIN directly to each observation, California BS sent HER

[3]UPIN-level totals may not necessarily be undercounts, if UPINs are missing on all the claims for a physician, as opposed to some of the claims for a physician.

a special crosswalk file (distinct from the one used in previous section). Unfortunately, this crosswalk file had to be linked to yet another file that they provided but for which they did not indicate that it was necessary to use. In order to link these files together, it was necessary to use two types of internal PINs (usually used only by California BS), PINs for which there was no documentation. In short, the data provided by California BS was not in a user-friendly format and, by far, the most difficult to work with from among all the files sent to HER by the five carriers. It is thus possible, for California BS, that HER did not extract allowed charges for all of the UPINs for which it was possible to do so. Unfortunately, as of December 1, 1996, California BS is no longer the carrier for Northern California and the personnel who sent the data are no longer with California BS.

Except for Alabama BC/BS, the mean of total allowed charges using NCH data exceeded the values obtained from the carriers (Table 5-2). The mean of total allowed charges using NCH data for Alabama BC/BS was 5.3 percent lower than the values tabulated from the carrier-supplied data while for the other carriers, the values derived from NCH data ranged 3.7 percent to 32.9 percent higher than values derived from carried-supplied files. Note that some physicians contribute zero values to the mean in Column 4 because no allowed charges were supplied by carriers for them.

Since it had been cxpected that carrier-supplied values would be higher than values derived from NCH data, these results are surprising. This result was further studied by performing an analysis of the difference in total allowed charges between NCH- and carrier-derived values using a t test on paired observations (paired by UPIN). Only those observations (UPINs) which had both total allowed charges greater than zero were used, to eliminate the effect of a few observations where carriers, apparently, were not able to supply valid data for the subject UPINs. In the final column of Table 5-2 is the mean of the differences between NCH and carrier total allowed charges. By restricting the sample sizes, California BS's mean difference became negative while the qualitative results for the other four carriers remained roughly the same. The t tests indicated that the differences in total allowed charges between the NCH and the carrier values were usually statistically significant at the 1 percent level.

An closer examination of the NCH and carrier-reported data was performed on those UPINs (physicians) where the allowed charges from both data sets were greater than zero. This was done to determine whether the results reported in the final column of Table 5-2 could be attributed to the data of only a couple of physicians. The examination revealed that none of

TABLE 5-2

COMPARISON OF TOTAL ALLOWED CHARGES FROM 1993 PHYSICIAN PART B SAMPLE WITH CARRIER-SUPPLIED VALUES FOR 1993

CARRIER		NCH CLAIMS		CARRIER VALUES			MEAN DIFFERENCES BETWEEN NCH AND CARRIER - SUPPLIED ALLOWED CHANGES WHEN BOTH VALUES ARE GREATER THAN ZERO	
Number	Name	Number	Mean	Number	Mean[a]	Percent Difference Between Means	Number	Mean Difference
00510	Alabama BC/BS	421	$84,225	421	$88,901	-5.3 %	421	-4,676 ***
00542	California BS[b]	397	51,489	397	49,673	3.7	393	-1,260 *
00700	C&S Administrative Services (MA)	591	57,066	591	51,473	10.9	466	3,571 ***
00865	Pennsylvania BS (PA)	330	78,905	330	59,385	32.9	330	19,520 ***
10250	MetraHealth (MS)	392	75,346	392	64,577	16.7	375	10,674 ***

NOTE:
[a] Some physicians contribute zero values to the mean because no allowed charges were supplied by carriers for them.
[b] Using only those physicians that could be found in the California BS data.

***The difference for paired observations is statistically significantly different from zero at the 1 percent level.
*The difference for paired observations is statistically significantly different from zero at the 10 percent level.

SOURCE: Tabulations performed by HER on carrier-supplied files and the 1993 Physician Part B sample.

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the carriers had more than ten physicians in which the NCH and carrier-reported allowed charges were exactly the same. With the exception of California BS, the mean difference in allowed charges does not appear to due to a few observations. About a third of the physicians from Alabama BC/BS, Pennsylvania BS, and MetraHealth (Mississippi) had a difference in allowed charges of more than ten thousand dollars. Nearly 20 percent of the C & S Administrative physicians had a difference in allowed charges of more than five thousand dollars. In none of these cases were the extreme differences on one side of the distribution of differences offset by the other extreme.

One reason why NCH values were usually higher than the carrier-supplied values is that it might have been difficult for the carriers to retrieve all of the pertinent claims (line items) for the sample UPINs from their information systems. For instance, if some carriers archive line items according to the date the line item was paid or approved rather than when the service was rendered, some line items might be located in data sets (e.g., tape cartridges) that were not used in providing HER with the requested values.[4]

5.3.2 Medicare Participation Status

To encourage providers to accept assignment for all Medicare beneficiaries treated, HCFA gives preferential treatment (e.g., a five percent higher payment rate) to providers that sign a *participation* agreement. Both beneficiaries and HCFA benefit from widespread *participation* by providers. Beneficiaries receiving care from participating providers are not liable for balance billing (i.e., charges greater than the allowed amount), although they are still liable for standard Medicare deductibles and co-insurance. To the extent that beneficiaries receive all of their Part B care from participating providers, they may have somewhat less out-of-pocket expenses.

Under carriers' provider identification systems, individual physicians often have multiple provider identification numbers (PINs), and members of group practices may use group practice PINs. Prior to the establishment of the Registry, this made it difficult to assess individual physician responses to changes in Medicare reimbursement policies. UPINs now

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[4]One carrier stated that they provided "the ... total amount billed, allowed, and paid for claims *processed* in 1993." (Emphasis added.) This statement seems to imply that claims for services provided during 1993, but processed during 1994, were not provided by the carrier. Similarly, the statements seems to imply that services provided during 1992, but processed during 1993, were included in the totals provided by the carrier.

give policy-makers the ability to determine the extent to which providers *participate* in all of their practice settings and allows for the systematic study of the relationship between participation status and Medicare reimbursement policies.

Inconsistencies in the coding of Medicare participation status, however, between claims and Registry data were found in a previous study.[5] It was found, for instance, that 26.4 percent of physicians whose Registry data indicated that they were not participating Medicare physicians were, according to the claims data, participating Medicare physicians.[6] Since carriers supply Medicare participation status to the Registry and place it on claims upon submission to the Common Working File (CWF), it was not clear why such discrepancies might arise. In order to further investigate the cause for the discrepancies, carriers were requested to supply HER with the Medicare participation status for each of their practice settings in 1994.

Carrier-supplied Medicare participation status was compared to both 1993 NCH claims data and to Registry data. With one exception, carriers provided Medicare participation status to HER on practice setting-level records. Since the record contained the same PIN as that used in the Registry, the carrier-supplied records could be matched directly to Registry records. Data from Pennsylvania BS (Xact) was deemed unacceptable for analysis because they provided Medicare participation status at the UPIN level rather than for each practice setting. Even if we knew the rule by which Pennsylvania BS used to assign a value of participation status, their data should not be used because there would be no "mixed"[7] status available for the comparison with the claims data and because no comparison could be performed with the Registry data. Additionally, because Pennsylvania BS included participation status in the same file with the total allowed charges per UPIN, individual UPINs were not available for about half the sample (see above).

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[5]Health Economics Research, Inc. *Unique Physician Identification Number (UPIN) Validation Studies, Final Report*. Prepared under HCFA Master Contract No. 500-92-0020. February 1995.

[6]*Ibid.*, Table 3-1.

[7]The term *mixed* is defined in Section 5.3.2.1.

5.3.2.1 Comparison of Carrier-Supplied to Claims' Medicare Participation Status

Even though Medicare participation status is an attribute of the physician's practice setting, and the carriers were requested to provide their independent validation data for all of the sample physicians' practice settings, the comparison of the carrier-reported participation status versus that appearing on the claim lines was conducted at the UPIN-level. NCH line items (within claims) from California BS and C & S Administrative Services do not have practice setting-specific PINs to allow such a line-by-line comparison.

NCH claims data from the 1993 Part B Physician Sample (Final Action Form) were used in the analysis. A participation status variable (NPAR) appears on all physician and supplier claims as recorded in the CWF. The description of "provider participation" in the NCH documentation is: "Code indicating whether or not a provider is participating or accepting assignment for this line item on the Part B claim." NPAR, thus, is a combination of participation status and whether the physician accepted assignment. In addition, as seen below, the NCH participating provider code embodies information on whether some or all of the expenses were applied to the deductible. The coding of provider participation on NCH claims is as follows:

1 Participating
2 All or some covered and allowed expenses applied to deductible – Participating
3 Assignment accepted – Non-participating
4 Assignment not accepted – Non-participating
5 Assignment accepted but all or some covered and allowed expenses applied to deductible – Non-participating
6 Assignment not accepted and all covered and allowed expenses applied to deductible – Non-participating
7 Participating provider not accepting assignment.

Given multiple practice settings for providers in the carrier-supplied data and the seven different codes indicating participation status in the NCH data, inconsistencies between measures of participation status derived from the two types of records could exist. Most providers, for instance, have more than one practice setting.

For each provider, thus, two composite variables were created that indicate Medicare participation status across *all* practice settings. One of these (PAR) is based on carrier-supplied data and the other (CPAR) is based on claims data. Both composite participation status

variables have three values: (1) always, (2) never, and (3) mixed. *Always* indicates that the provider participates in all practice settings. In order for PAR to equal *always* for a given provider, carrier-supplied participation status PAR must equal *Yes* for each practice setting. In order for CPAR to equal *always* for a given provider, NPAR must equal codes 1, 2 or 7 on all of the submitted claims. *Never* indicates that the provider does not participate in any practice setting. In order for PAR to equal *never* for a given provider, carrier-supplied participation status must equal *No* for each practice setting. In order for CPAR to equal *never* for a given provider, NPAR must equal code 3, 4, 5, or 6 on all of the submitted claims. *Mixed* indicates that the provider participates in some practice settings but not others. In order for PAR to equal *mixed* for a given provider, at least one value of the carrier-supplied participation status must equal *No* and at least one value of must equal *Yes*. In order for CPAR to equal *mixed* for a given provider, NPAR must equal code 1, 2, or 7 on at least one claim and, NPAR must equal code 3, 4, 5, or 6 on at least one claim.

Exhibit 5-1 shows the consistent and inconsistent combinations of the two composite Medicare participation status variables in a matrix format. Instead of restricting consistent combinations to the diagonal elements in the matrix, two other combinations were also deemed consistent. The combination of carrier *mixed* and claims *always* was considered consistent because a physician might not have provided any services to M licare beneficiaries at the non-participating practice settings. Similarly, the combination of carrier *mixed* and claims *never* was considered consistent because a physician might not have provided any services to Medicare beneficiaries at the participating practice settings.

The consistency of Medicare participation status between the carrier-supplied values and the claims data was highest for MetraHealth with 93.6 percent for the sample physicians (Table 5-3); California BS was a distant second with 78.2 percent consistent followed closely by Alabama BC/BS with 75.8 percent consistent. C & S Administrative Services had the lowest consistency rate with just 58.2 percent physicians having consistent carrier-supplied values and claims values. Following the next section, these results are discussed in conjunction with the next section's results.

EXHIBIT 5-1

CONSISTENCY DEFINITION FOR COMPARISONS BETWEEN CARRIER-SUPPLIED AND CLAIMS' MEDICARE PARTICIPATION STATUS

Composite Carrier-Supplied Medicare Participation Status	Composite Claims' Medicare Participation Status		
	Always Participating	Never Participating	Mixed
Always Participating	C	I	I
Never Participating	I	C	I
Mixed	C	C	C

NOTES:

C denotes consistent composite participation statuses
I denotes inconsistent composite participation statuses

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TABLE 5-3

CONSISTENCY OF MEDICARE PARTICIPATION STATUS ON NCH CLAIMS DATA AND CARRIER-SUPPLIED VALUES FOR 1994

	ALABAMA BC/BS		CALIFORNIA BS		C&S ADMINISTRATIVE SERVICES (MA)		METRAHEALTH (MS)	
	Number of Physicians	Percent	Number of Physicians	Percent	Number of Physicians	Percent	Number of Physicians	Percent
Consistent								
Carrier Participating & Claims Participating	276		220		296		221	
Carrier Mixed & Claims Participating	1		51		6		54	
Carrier Not Participating & Claims Not Participating	30		134		39		64	
Carrier Mixed & Claims Mixed	10		57		2		17	
Carrier Mixed & Claims Not Participating	2		40		1		11	
Total Consistent	319	75.8 %	502	78.2 %	344	58.2 %	367	93.6 %
Inconsistent								
Carrier Participating & Claims Not Participating	11		23		6		14	
Carrier Participating & Claims Mixed	90		67		83		5	
Carrier Not Participating & Claims Participating	1		24		111		4	
Carrier Not Participating & Claims Mixed	0		26		47		2	
Total Inconsistent	102	24.2 %	140	21.8 %	247	41.8 %	25	6.4 %

SOURCE: Carrier-supplied values and 1993 Physician Part B sample.

5.3.2.2 Comparison of Carrier-Supplied to Registry Medicare Participation Status

Unlike the previous set of comparisons which relied on composite measures of Medicare participation status at the UPIN level, the comparisons between carrier-supplied and Registry participation status were performed at the practice setting level because both UPINs and PINs could be matched at the practice setting level. Medicare participation status data from both the April 1994 and January 1995 Registry files were used in these comparisons. Data from two Registry files were used because it was not clear whether the carriers were supplying the Medicare participation status that prevailed during most of 1994 or the status as of the end of 1994. The best results, i.e., the highest consistency rates, from using the two sets of Registry data are reported in Table 5-4.

Since Medicare participation status is dichotomous, either participating or not participating, at the practice-setting level, it was not necessary to create a mixed participation category. Consistent categories for this analysis, thus, are more straight-forward that for Table 5-3. With the exception of California BS, the carriers that had relatively high (low) consistency rates in Table 5-3, had relatively low (high) consistency rates in Table 5-4. The consistency rate for MetraHealth, thus, is only 30.9 percent at the practice-setting level compared to the 93.6 percent rate at the UPIN level (Table 5-3). Alabama BC/BS had the highest consistency rate for the practice-setting analysis at 99.1 percent and C & S had the second highest consistency rate at 97.4 percent. The practice-setting level consistency rate for California BS was 73.2 percent, five percentage points lower than for their UPIN-level consistency rate.

5.3.2.3 Summary on the Consistency of Medicare Participation Status

With the exception of California BS, the consistency of the carrier-supplied Medicare participation status with Registry and NCH claims data is very sensitive to the date of the data used in the comparisons. Although not shown, the practice-setting level consistency rates for Alabama BC/BS and C & S Administrative Services were much lower using the April 1994 Registry data than they were for the January 1995 Registry data. It thus appears that these two carriers supplied Medicare participation status as of the end of 1994 (after the last-quarter participation status election period, during which the physician decides on status for the following year) rather than the status that prevailed during most of 1994. If so, this helps

TABLE 5-4

CONSISTENCY OF MEDICARE PARTICIPATION STATUS BETWEEN REGISTRY AND CARRIER-SUPPLIED VALUES FOR 1994

	ALABAMA BC/BS[a]		CALIFORNIA BS[a]		C&S ADMINISTRATIVE SERVICES (MA)[a]		METRAHEALTH (MS)[b]	
	Number of Practice Settings	Percent	Number of Practice Settings	Percent	Number of Practice Settings	Percent	Number of Practice Settings	Percent
Consistent								
Carrier Participating & Registry Participating	623		673		1,019		103	
Carrier Not Participating & Registry Not Participating	47		399		488		170	
Total Consistent	671	99.1 %	1,072	73.2 %	1,507	97.4 %	273	30.9 %
Inconsistent								
Carrier Participating & Registry Not Participating	6		381		33		578	
Carrier Not Participating & Registry Participating	0		11		7		33	
Total Inconsistent	6	0.9 %	392	26.8 %	40	2.6 %	611	69.1 %

SOURCE:
[a] January 1995 Registry files and carrier-supplied values.
[b] April 1994 Registry files and carrier-supplied values.

explain the low Medicare participation status consistency rates between the carrier-supplied data and the 1993 NCH claims data. In an analogous manner, the reason that MetraHealth had a high consistency rate for the 1993 claims data but not for the Registry data, apparently, is that the Medicare participation status that they provided was from the beginning of 1994. If these conjectures are indeed correct, analytical results are very sensitive to the date of the data. This implies that Medicare participation status, as well as other data elements, may exhibit extraordinarily large changes (for large numbers of physicians) in a short period of time.

5.3.3 Group Practice Indicator

Carrier-supplied values of the group practice indicator were compared to their Registry counterparts at the practice-setting level. As with the Medicare participation status, the group practice indicator is a dichotomous variable. On the Registry, the group practice indicator is coded as 1 (group) or 4 (solo or individual). With the exception of California BS, each of the carriers produced a dichotomous variable indicating whether the practice setting was for a solo or group practice. California BS supplied a file that contained only group practice settings – HER denoted those practice settings not included in California BS's file as solo (individual) practice settings. As in the case of the Medicare participation status analysis, the best results from using the April 1994 or the January 1995 Registry file are presented. Although these consistency rates seem high by comparison to those for Medicare participation status, they should really be equal to 100 percent because, except for MetraHealth, the formats for carrier-issued PINs are different for group and solo practices.

Consistency rates for the group practice indicator ranged from 93.2 percent for MetraHealth to 99.8 percent for Pennsylvania BS (Table 5-5). Just as the carrier-supplied Medicare participation status was compared to value on the claims data, it had been intended to compare the group practice indicator from each data set. However, as noted in Section 3.2.3, the quality of the coding of the "group practice indicator" on the claims data is very poor (Exhibit 3-3). As a consequence of the poor quality of the group practice indicator on the claims data, the comparison with the carrier-supplied values was not undertaken.

TABLE 5-5

CONSISTENCY OF GROUP PRACTICE INDICATOR BETWEEN REGISTRY AND CARRIER-SUPPLIED VALUES FOR 1994

	ALABAMA BC/BS[a]		CALIFORNIA BS[a]		C&S ADMINISTRATIVE SERVICES (MA)[a]		PENNSYLVANIA BS (PA)[b]		METRAHEALTH (MS)[b]	
Consistent	Number of Practice Settings	Percent	Number of Practice Settings	Percent	Number of Practice Settings	Percent	Number of Practice Settings	Percent	Number of Practice Settings	Percent
Carrier Group, Registry Group	526		1,020		854		653		632	
Carrier Solo, Registry Solo	135		439		650		608		192	
Total Consistent	665	98.4 %	1,459	99.7 %	1,504	97.2 %	1,261	99.8 %	824	93.2 %
Inconsistent										
Carrier Group, Registry Solo	9		2		42		2		2	
Carrier Solo, Registry Group	2		3		1		1		58	
Total Inconsistent	11	1.6 %	5	0.3 %	43	2.8 %	3	0.2 %	60	6.8 %

SOURCE:
[a] January 1995 Registry files and carrier-supplied values.
[b] April 1994 Registry files and carrier-supplied values.

5.4 High-Volume Physician Investigation

One of HCFA's on-going concerns is the existence and rationale for physicians with high annual Medicare volume and allowed charges (greater than one million dollars in total). Little is known about the circumstances under which such high billings arise. As a consequence, HCFA contracted with HER to coordinate with Medicare Part B carriers on an investigation of high volume physicians.

The analytic approach that was adopted considered the physician's practice as a whole, *as it existed in 1994*. It was designed to differentiate, to the extent possible, between the following possible factors associated with high total allowed charges:

- extensive use of physician extenders;
- inappropriate usage (inadvertent or otherwise) of a given physician's UPIN by more than one physician in a group or partnership setting;
- conspicuously large shares of laboratory or other ancillary claims; and
- other extraordinary patterns in the claims data.

As a consequence, both the inputs (e.g., staffing) and the outputs (e.g., claims) of the practice should be examined. For instance, a million dollars in allowed charges could be quite easily and appropriately be generated by a solo physician who employed five nurse practitioners.

The carriers were requested to supply the data necessary to support the investigation. Four forms were designed to assist the carriers collect the data, their titles were:

- Solo Practitioners
- Group Practice or Partnership Member
- On-Site Diagnostic and Laboratory Services
- Composition of Medicare Volume and Charges

The data request was accompanied by five pages of detailed data collection instructions. The types of data requested included:

- basic physician identification and, if applicable, group identification;

- physician extender staffing and, if any, associated submitted charges;
- the composition of Medicare volume (line items) and allowed charges by HCFA type of service;
- the presence of specified diagnostic and laboratory services provided on-site; and
- for group practices only:
  - the number of each type of physician (e.g., MDs) and their associated Medicare allowed charges and
  - for the MDs, the number by specialty.

The data collection forms and their instructions are in Appendix D. The five physicians for each participating carrier were selected by HER from a HCFA-provided list of physicians with more than one million dollars in Medicare allowed charges during 1994. HCFA's list, however, did not indicate the actual Medicare allowed charges during 1994. The only selection criteria applied by HER in choosing five physicians for each carrier from HCFA's list was, when possible, to have at least one physician that was only a solo practitioner and at least one physician that practiced only in a group. (See Section 5.1 for a description of the data collection problems for the high-volume physician investigation.)

Of the seven carriers, only three supplied HER with data. Only C & S Administrative Services (Massachusetts) and Alabama BC/BS provided data that might be analyzable. However, C&S did not provide information on physician extenders, the specialties of the group MDs, and the types of diagnostic and laboratory services provided on-site.

5.4.1 Alabama High-Volume Physicians

All five of the Alabama high-volume physicians are Medical Doctors (MDs). Two are cardiologists, one is a cardiac surgeon, one is an ophthalmologist, and the last is either a hematologist or an oncologist (Table 5-6). (The identity of each MD was supplied to HCFA.) With only one of the five MDs over 50 years old at the end of 1996, they all appear to be in the middle part of their medical careers. All five MDs are a member or otherwise affiliated with a group practice. Three are members of more than one group. Only one of the five also maintains a solo practice.

TABLE 5-6

ALABAMA 1994 HIGH-VOLUME PHYSICIANS, SELECTED PRACTICE CHARACTERISTICS

ID	Specialty	Age at End 1996	Grad Year	Number of Group Practice Affiliations	STAFFING: No. Physicians: MDs	STAFFING: No. Physicians: Others	STAFFING: Other Non-Physicians*	Allowed Charges From: Group**	Allowed Charges From: Individual	Share of Allowed Charges
1	Cardiology	49	1977	2	4	1	1	$1,796,554	$1,193,183	66.4 %
2	Ophthalmology	50	1977	1	1	0	7	N/A	1,041,734	N/A
3	Cardiology	42	1980	3	3	0	0	2,357,112	1,168,045	49.6
4	Cardiac Surgery	56	1964	1	464	0	307	33,109,687	1,725,601	5.2
5	Hematology/Oncology	37	1985	2	3	0	14	4,659,023	2,052,247	44.0

Notes:
*Includes only patient care providers such as nurses and technicians; does not include clerical and administrative staff.
**Group in which the high-volume physician had the highest allowed charges.

N/A: Not applicable

The number of physicians and the total allowed charges for each group are also shown on Table 5-6. For MDs with multiple group memberships, only information from the groups where they had the highest allowed charges are provided in Table 5-6. (The identity of each group was supplied to HCFA.) Two of the MDs with multiple group affiliations did not have any claims activity in one of their groups. Another multiple-group physician had but one claim during 1994 at one of his groups. Finally, the only physician with a solo practice had claims activity in a group setting, but his allowed charges at this group only amounted to $3,200, a trivial share of his total allowed charges. Table 5-6, thus, shows the relevant practice settings in which the subject physician accumulated more than one million dollars in allowed charges.

Although MD #1's share of allowed charges of his group is on the high side (66.4 percent), it is not conspicuously so. Given the small sizes of their groups, MD #3 and #5's shares of allowed charges, 49.6 percent and 44 percent respectively, are not high. These results suggest that the identifiers of these three physicians do not appear to be used by other physicians within their groups.[8]

With seven certified ophthalmology technicians in his employ, the ophthalmologist could have easily generated one million dollars in allowed charges during 1994. For none of the other subject physicians does the presence of physician extenders (e.g., physician assistants and nurse practitioners) seemingly contribute to the physician's ability to provide a high volume of services.

The services provided by MD #3 (cardiologist) and MD #4 (cardiac surgeon) were predominately surgery and medical care (Table 5-7). The line item counts for both do not seem particularly high. MD #1 (cardiologist) seems to have ordered a very high amount of diagnostic laboratory services: over 50 percent of his allowed charges and about 70 percent of his 27,901 line items. With over 40,000 line items, MD #5 (hematologist or oncologist) seems to have provided an very large number of services, three-fourths of which were for medical care. The counts of line items for both MDs #1 and #5 also seems to indicate that the practices of these physicians consisted almost exclusively of Medicare beneficiaries.

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[8]We did find, however, among the information provided by Alabama BC/BS, a physician (other than one of the five in Table 5-6) that had over 97 percent of the allowed charges in a group that had seven providers in total. The group only had $170,000 in total allowed charges. The identifier sequence for the other six providers suggested credentials other than a MD (e.g., a registered nurse). HCFA was provided this information and might request Alabama BC/BS to provide additional information on the group.

TABLE 5-7

SERVICES PROVIDED BY ALABAMA HIGH-VOLUME PHYSICIANS, 1994

HCFA TYPE OF SERVICE Code	Description	Allowed Charges	Line Items
MD #1 (Cardiologist)			
1	MEDICAL CARE	190,042	5,560
2	SURGERY	395,303	1,891
3	CONSULTATION	7,421	112
4	DIAGNOSTIC RADIOLOGY	33,483	670
5	DIAGNOSTIC LABORATORY	568,935	19,668
	Totals	**1,193,183**	**27,901**
MD #2 (Ophthalmologist)			
1	MEDICAL CARE	40,112	1,264
2	SURGERY	865,341	1,404
3	CONSULTATION	78,772	788
5	DIAGNOSTIC LABORATORY	57,193	1,228
9	OTHER MEDICAL ITEMS OR SERVICES	316	17
	Totals	**1,041,734**	**4,701**
MD #3 (Cardiologist)			
1	MEDICAL CARE	172,739	3,709
2	SURGERY	836,017	3,625
3	CONSULTATION	21,560	288
4	DIAGNOSTIC RADIOLOGY	67,290	1,273
5	DIAGNOSTIC LABORATORY	70,407	1,859
8	ASSISTANT AT SURGERY	0	1
V	PNEUMOCOCCAL VACCINE	32	8
	Totals	**1,168,045**	**10,763**
MD #4 (Cardiac Surgeon)			
1	MEDICAL CARE	59,084	543
2	SURGERY	1,666,512	1,345
V	PNEUMOCOCCAL VACCINE	5	1
	Totals	**1,725,601**	**1,889**
MD #5 (Hematologist/Oncologist)			
1	MEDICAL CARE	1,924,354	29,198
2	SURGERY	392	3
3	CONSULTATION	29,011	240
4	DIAGNOSTIC RADIOLOGY	3,903	198
5	DIAGNOSTIC LABORATORY	88,568	10,618
9	OTHER MEDICAL ITEMS OR SERVICES	0	22
P	PURCHASE OF DME (LUMP SUM PAYMENT)	1,074	41
R	RENTAL OF DME	4,494	26
V	PNEUMOCOCCAL VACCINE	452	111
	Totals	**2,052,247**	**40,457**

NOTE: Data from only one practice setting used for each physician. The practice setting which contributed the largest share of physician's allowed charges was used. If it was a group practice, the values presented above are for the subject physician only.

SOURCE: Tabulations performed by Health Economics Research, Inc. on data provided by Alabama BC/BS.

Of these five physicians, only #1 and #5 would seem to have practice styles that might warrant further investigation. Also, even though their share of allowed charges of their group's totals seemed reasonable, the counts of line items seem particularly high and might indicate usage of their identifiers by other members of their groups. Aside from the fact that they had over one million dollars in allowed charges, the evidence presented on the practices of the other three physicians does not seem to indicate excessive provision of services or use of their identifiers by other physicians.

5.4.2 Massachusetts High-Volume Physicians

All five of the Massachusetts high-volume physicians are Medical Doctors (MDs). Three of them are ophthalmologists, one is a psychiatrist, and the other is in internal medicine (Table 5-8). (The identity of each MD was supplied to HCFA.) With the youngest of the five MDs being 47 years old at the end of 1996, they all appear to be well into their medical careers. All five MDs are a member or otherwise affiliated with a group practice. Two of the five MDs are a member of more than one group. Three of the five also maintain a solo office.

The number of physicians and the total allowed charges for each group are also on Table 5-8. For MDs #1 and #2, only information from the two largest groups, as defined by total allowed charges, are provided in Table 5-6. Although requested, the total allowed charges for each physician under investigation was not provided.[9] Therefore, all that we know is that these five individuals had at least one million dollars in Medicare allowed charges. As can be seen from Table 5-8, however, it is not clear that C & S collected all of the relevant allowed charges. For MD #3, in particular, $165 in total allowed charges is implausibly low.[10] For the last three MDs in Table 5-8, C & S also completed a *Composition* ... form for what appears to be for the individual physician. However, the total dollar amounts are all under five thousand dollars each. This small bit of information, thus, also does not provide any meaningful insights into why these physicians had such high allowed charges during 1994.

One explanation for why the subject physicians (with the exception of MD #3) have more than one million dollars of allowed charges is that their identifiers might be used by other

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[9]C & S Administrative Services indicated that they had difficulties in retrieving such data.

[10]For a psychiatrist to have more than one million dollars in Medicare allowed charges also seems highly unusual.

TABLE 5-8

MASSACHUSETTS 1994 HIGH-VOLUME PHYSICIANS, SELECTED CHARACTERISTICS

ID	Specialty	Age at End 1996	Grad Year	Solo	Number of Group Practice Affiliations	GROUP PRACTICE #1 No. of Physicians MDs	GROUP PRACTICE #1 No. of Physicians Others	GROUP PRACTICE #1 Allowed Charges	GROUP PRACTICE #2 No. of Physicians MDs	GROUP PRACTICE #2 No. of Physicians Others	GROUP PRACTICE #2 Allowed Charges
1	Internal Medicine	47	1978	Y	3	5	0	1,258,417	100	11	3,944,211
2	Ophthalmology	57	1965	Y	4	128	23	5,145,795	17	3	5,085,527
3	Psychiatry	69	1959	Y	1	3	1	165			
4	Ophthalmology	60	1962	N	1	4	0	1,198,985			
5	Ophthalmology	51	1971	N	1	10	11	3,954,974			

NOTES:

1. All physicians are a member of (affiliated with) at least one group practice.
2. The number of physicians is from the *Group or Partnership Member Form*.
3. Allowed charges were taken from the *Composition of Medicare Volume and Charges* form.
4. For physicians #1 and #2, the number of MDs and allowed charges from the two largest groups are shown here.

SOURCE: C & S Administrative Services.

members of the group in which they are affiliated. However, without the subject physician's total allowed charges associated with each group practice setting, the evidence is weak that such usage occurs. Another explanation for high allowed charges is the specialty: three of the high-volume physicians are ophthalmologists. It is well known that ophthalmologists tend to have very high allowed charges. The high-volume Alabama ophthalmologist had seven certified ophthalmology technicians to help him realize his patient volume. Although C & S was not able to provide such information, the Massachusetts ophthalmologists also might have had such personnel to help them realize more than one million dollars in allowed charges.

5.5 Summary

Key Findings

- Collecting data from carriers proved to be very time-consuming and costly.
- Carrier-supplied data often did not meet the requested specifications (e.g., different formats or missing important data elements).
- With the exception of Alabama BC/BS at 92.7 percent, UPINs were found for 6.1 percent to 12.7 percent of NCH line items previously without UPINs.
- Contrary to expectations, total Medicare allowed charges had higher values when derived from NCH claims than when derived from carrier-supplied data.
- The consistency rate of the carrier-supplied Medicare participation status with 1993 NCH claims ranged from 93.6 percent (MetraHealth) to 58.2 percent (C & S Administrative Services).
- In the comparison of the carrier-supplied Medicare participation status with Registry data:
  - the consistency rate was sensitive to whether the April 1994 or January 1995 Registry file was used in the comparison;
  - the consistency rates ranged from 99.1 percent (Alabama BC/BS) to 30.9 percent (MetraHealth); and
  - with the exception of California BS, those carriers with high (low) consistency rates in the NCH comparisons had low (high) consistency rates in the Registry comparison.

- The consistency rate of the carrier supplied group practice indicator with Registry data ranged from 99.8 percent (Pennsylvania BS) to 93.2 percent (MetraHealth).

- Although the results tentatively suggest that the UPINs of four of the five Massachusetts high-volume physicians might be used by other group members, no definitive explanation for the occurrence of physicians with more than one million dollars of Medicare allowed charges can be determined with the data submitted by C & S Administrative Services.

Discussion

With their orientation towards claims processing, carriers seem to have problems in providing data in non-standard formats (for carriers, that is) to outside parties such as professional researchers. It was apparent that the carriers requested additional monies to fulfill the data request because of these problems rather than just to make extra profit. (Since some of the monies went to the group that maintains the shared service system to which the carrier belongs, it could very well be that these other parties were primarily responsible for some of the initially high budget requests.) Since the carrier interviews, both for this project and its predecessor project, indicated that some of the carriers did not routinely archive their provider file, it had been anticipated that some of the provider file data would be difficult to obtain for the specified time period (usually 1994). Additionally, since total allowed charges from NCH claims was often higher than from carrier-supplied data, carriers might be storing such information on the basis of the approval or paid date for the line item rather than the date of the claims submission (by the provider) or the service date.

If HCFA had not paid the carriers to provide data to HER, only Xact (Pennsylvania BS) would have provided data. It was not until the summer of 1996 that HCFA decided to pay the carriers for the data. This late decision contributed to problems in the relationships HER had with the carriers. Specifically, with a focus on receiving the data in the first instance, HER and the carriers were not able to establish a close working relationship. Further, HER was not able to provide on-going guidance to the carriers and give feedback about what was submitted, after it was submitted. In light of the complex nature of the data requests, this was regrettable. One lesson that was learned from this experience is that the cost to the investigator can be very high in trying to carry out these validation activities.

In the carrier case study contacts, it was learned that some carriers submit claims to the CWF even though an UPIN had not yet been obtained for the, presumably, new physician who

had sent his/her first Medicare claim to the carrier. Even though it is desirable that carriers obtain an UPIN prior to claims submission, they sometimes do not wait because they also have been instructed by HCFA to process claims in a timely fashion. Delays in obtaining a completed application form from the new physician or in Registry processing may be the reason the carriers finally forward claims without UPINs to the CWF. This presumably explains why it was possible to use the carrier-supplied PIN-to-UPIN crosswalks to find UPINs for NCH line items previously without UPINs. If this conjecture is not correct, then the reason for missing UPINs on NCH claims could be more serious. That is, there might be breakdown during claims processing when the claims-processing computer program accesses the provider file to obtain the UPIN associated with the PIN of the performing physician.

The results of the comparison of carrier-supplied Medicare participation status with comparable data elements in the Registry and NCH data point towards the time sensitivity of Registry data.[11] While claims from every day of the year are present in the NCH, Registry data is typically only available for specific dates such as April 4, 1994. Even the carrier-supplied data suffers from limitations of the Registry data. In contrast, when claims are processed, they have immediate access to the carrier's provider file. As shown in the previous chapter, even when just comparing quarterly Registry files, it is apparent that the carriers' provider files are constantly being updated. This accounts, then, for some of the discrepancies found in comparisons of common data elements in the Registry and NCH claims data. An unsettled question is why so many data elements have to be changed, even those that seemingly should remain relatively stable during the year (e.g., zipcode).

Finally, the high-volume physician investigation was somewhat disappointing. Even with detailed instructions, one of the two carriers that actually attempted to provide the requisite data did not provide all of it. Other carriers cited lack of available personnel and time as a reason for not undertaking the data collection, even when offered additional funds. This seems odd because all carriers should have a fraud-and-abuse section because their basic carrier contract with HCFA requires carriers to routinely perform such investigations. Apparently, however, only one of the carrier contacts thought of using their fraud-and-abuse section to assist them collect information.

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[11]Recall from Chapter 3 that inconsistencies between the Registry and claims can arise because of different carrier sources for common data elements.

APPENDIX A

STATE LICENSE BOARD INTERVIEW PROTOCOL

DRAFT STATE LICENSE BOARD INTERVIEW PROTOCOL

Assigning State License Numbers

1. What information do you require to verify that the applicant has the requisite degree before assigning a license number? And do your perform primary source verification?

Required information:	Primary source verification:
Documentation showing evidence of professional certification from applicable professional school.	_____
Other	
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

2. How do you define primary source verification?

3. Do you check to see if the professional had a previous license number assigned?

No_____

Yes_____

If yes, for what time period? _____

4. Do you check to see if the professional has an active license in another state?

No_____

Yes_____ If yes, do you request the license number?_____

5. Do you ever assign a temporary license number?

No_____

Yes_____ Please explain how it is used and any time limits applied:_____

_____

_____

_____

6. For what length of time is the license valid?

1 Year_____

2 Years_____

3 Years_____

Other_____

7. What is your procedure for identifying expired licenses?

Don't have one_____

Computer generated reports identifying expired license numbers.____

Other_____

8. What is your procedure for renewing licenses?

Validate continuing education requirement_____

Confirm current required documentation received._____

Other_____

Other_____

Other_____

9. Under what circumstances is a license number suspended, deactivated, or terminated?

Voluntary return of license prior to death or retirement_____

Death_____

Retirement_____

Sanction _____

Other_____

Other_____

10. Is a suspended, deactivated or terminated license number ever reissued?

	Suspended	Deactivated	Terminated
No	____	____	____
Yes	____	____	____

If yes,

Is it reissued to the same professional? _____

Is the license number ever reused/issued to a different professional? _____

What is the length of time between reactivating/reissuing a license number? _____

11. How are deactivated, suspended, terminated license numbers identified in your database?

_____

_____

_____

12. How long do the deactivated, terminated or suspended license numbers remain in your database?

___3 Months
___6 Months
___1 Year
___Other _____

13. Are license numbers ever deleted from your database?

No____

Yes____ If yes, please explain_____

_____

14. Under what circumstances could the same Professional have different license numbers in your data base?

Never_____

If the professional has multiple specialties_____

If the professional allows license to lapse, then reactivates_____

Other_____

_____

_____

15. What problems do you have in distinguishing between two individuals with similar names and other similar characteristics?

None_____

Other_____

_____

_____

State License Number Format

1. Describe the format of the license number;

Length of the number_____

Numerics only_____

Letters only_____

Numerics and letters_____

2. Is there any logical intelligence to the license number?

No_____

Yes____ Please specify and perhaps give an example of a license_____

_____

3. Are the numbers manually assigned or system generated?

Manual____

System____ Year effective _____

4. When assigning a license number, how do you ensure the number is unique to only that one professional?

_____

_____

_____

5. Do you verify the professional's data entered into the database for accuracy, missing information and logical values?

No_____

Yes_____If so, how?_____

_____

6. Have changes occurred in the license number format over the past 5 years?

No___

Yes_____ If yes,

When and how have the changes been implemented? _____

_____

Did you update the older records with the new numbers or use both systems simultaneously?_____

_____

7. Have changes occurred in the license number format since 1950?

No_____

Yes_____Please explain_____

_____

Interface between the State Boards and the Medicare carriers

1. Is information regarding a suspended, deactivated and or terminated license automatically communicated to the Medicare carrier?

   No_____ Please explain:

   Information is released on request basis only_____

   Other_____

   _____

   Yes_____If yes, how is it communicated to the carrier?_____

   _____

   _____

2. How are changes in license number assignment communicated to the carriers?

   No communication_____

   Other_____

   _____

3. How does the carrier query the license board?

   Telephone_____

   Letter request_____

   On-line access_____

   You provide the carrier with periodic hard copy listings_____

   You provide the carrier with periodic electronic listings_____

   Other _____

   _____

License File Maintenance

1. In what format is your licensure information maintained?

   Hard copy listings_____

   Electronic listings_____

   On-line data base_____

   Other_____

   _____

2. How often are your licensure files updated?

   As new license numbers are added_____

   Weekly___

   Monthly____

   Quarterly___

   Other_____

3. Are there instances when a professional with a valid license will not show up in your files?

   No____

   Yes____ If yes, please explain_____

   _____

   _____

4. Are there instances where a physician with an inactive license will appear in your data files as active after the deactivation date?

No_____

Yes_____ If yes, please explain_____

_____

_____

_____

5. Do you allow public access to your database files?

No_____

Yes_____ If yes, please explain your policy guidelines._____

_____

_____

_____

Privacy rights of professional_____

How is the access made?

On-line_____

Internet_____

Bulletin board_____

6. How well would a state license number work as a unique identifier? _____

_____

_____

Relationship with other Professional Boards within the State

1. Do you have working relationships with other Professional boards?

   No_____

   Yes_____ Which ones and type of relationship?

   _____

   _____

   _____

   _____

2. Do you adopt common policies?

   No_____If not, are you aware of other professional board's policies?____

   _____

   Yes_____

   Numbering system_____

   Numbering format_____

   Other _____

   Other _____

3. Do you exchange information with other professional boards?

   No_____

   Yes_____If so, what kind of information and how is it exchanged?_____

   _____

   _____

APPENDIX B

ANCILLARY TABLES FOR CHAPTER THREE

TABLE B-1

NUMBER OF UPINS PER UNIQUE STATE LICENSE NUMBER

State	Number of UPINs Per State License Number	Number of Unique License Numbers
Alabama	1	9,965
	2	16
Alaska	1	1,101
	2	8
Arizona	1	7,124
	2	361
	3	24
	4	1
	5	1
Arkansas	1	3,552
	2	121
California	1	100,795
	2	938
	3	9
	4	1
Colorado	1	9,282
	2	128
	3	1
Connecticut	1	6,366
	2	106
Delaware	1	1,670
	2	6
District of Columbia	1	3,354
	2	34
	3	1
Florida	1	30,677
	2	3,369
	3	869
	4	218
	5	23
	6	2
	7	2
	14	1
Maine	1	2,387
	2	35
	3	3
Maryland	1	12,541
	2	157
	3	9
	4	1
Georgia	1	11,044
	2	334
	3	16
	5	1
Hawaii	1	2,709
	2	145
	3	16
Idaho	1	2,134
	2	9
Illinois	1	35,533
	2	468
	3	12
	4	1
	5	1
	8	1
Indiana	1	16,658
	2	321
	3	19
	4	2
	16	1
Iowa	1	7,115
	2	337
	3	24
	4	3
Kansas	1	5,417
	2	76
Kentucky	1	8,503
	2	191
	3	5
Louisiana	1	9,424
	2	306
	3	16
	5	1
Mississippi	1	3,905
	2	46
	3	1
Missouri	1	9,956
	2	198
	3	2
	8	1

TABLE B-1 (continued)

NUMBER OF UPINS PER UNIQUE STATE LICENSE NUMBER

State	Number of UPINs Per State License Number	Number of Unique License Numbers
Massachusetts	1	16,198
	2	155
	3	1
Michigan	1	24,913
	2	1,384
	3	79
	4	4
	5	2
	6	1
	10	1
	11	1
Minnesota	1	11,968
	2	536
	3	127
	4	70
	5	55
	6	20
	7	15
	8	8
	9	10
	10	6
	11	1
	12	3
	13	2
	14	1
	18	1
	30	1
	32	1
North Dakota	1	1,490
	2	74
	4	1
Ohio	1	25,489
	2	1,979
	3	282
	4	23
	5	1
Oklahoma	1	4,997
	2	245
	3	15
Oregon	1	7,207
	2	129
Pennsylvania	1	40,419
	2	91
	3	2
	13	1
Montana	1	2,094
	2	67
Nebraska	1	3,219
	2	97
	3	3
Nevada	1	2,515
	2	77
	4	1
New Hampshire	1	2,380
	2	13
	3	1
New Jersey	1	21,613
	2	479
	3	23
New Mexico	1	3,159
	2	57
	3	2
New York	1	55,299
	2	2,139
	3	422
	4	23
North Carolina	1	14,650
	2	187
Texas	1	35,355
	2	842
	3	27
	4	2
	5	1
Utah	1	4,130
	2	39
	3	2
Vermont	1	1,133
	2	3
Virginia	1	13,288
	2	88
	3	1
Washington	1	13,351
	2	113
	3	4
	16	1

TABLE B-1 (continued)

NUMBER OF UPINS PER UNIQUE STATE LICENSE NUMBER

State	Number of UPINs Per State License Number	Number of Unique License Numbers
Rhode Island	1	3,008
	2	172
	3	27
	4	1
South Carolina	1	8,382
	2	104
	3	8
South Dakota	1	1,418
	2	72
	3	12
Tennessee	1	12,291
	2	188
	3	6
	4	3
	14	1
West Virginia	1	4,695
	2	192
	3	7
	4	1
	8	1
	10	2
	24	1
Wisconsin	1	13,823
	2	274
	3	2
	4	1
Wyoming	1	1,019
	2	28

SOURCE: Health Economics Research, Inc. tabulations of 1994 Physician Registry file.

TABLE B-2

ACTUAL FORMAT OF REGISTRY STATE LICENSE NUMBERS

State: Alabama
Credential: Medical Doctor

FIRST OR LEFT-MOST 7 BYTES			LAST OR RIGHT-MOST 5 BYTES		
Symbol[a]	Frequency	Percent	Symbol[b]	Frequency	Percent
&&&&&&&	21,527	98.9 %	All Blank	93	0.4 %
&&&&&&X	73	0.3	9	4	0.0
&&&&&&9	29	0.1	99	2	0.0
&&&&&X-	1	0.0	XX9	1	0.0
&&&&&XX	69	0.3	999	17	0.1
&&&&&X9	3	0.0	XXXX	1	0.0
&&&&&99	14	0.1	XX99	4	0.0
&&&&X&&	3	0.0	X999	10	0.0
&&&&XX&	5	0.0	999X	1	0.0
&&&&XX-	2	0.0	9999	1,397	6.4
&&&&XXX	3	0.0	-9999	5	0.0
&&&&X99	1	0.0	/9999	1	0.0
&&&&99&	3	0.0	X-999	8	0.0
&&&&999	3	0.0	XX-99	2	0.0
&&&XX&&	2	0.0	XX999	42	0.2
&&&XX&9	1	0.0	X9999	221	1.0
&&&XX99	3	0.0	9-XXX	1	0.0
&&&X999	1	0.0	9X999	1	0.0
&&&9&&&	2	0.0	99/99	1	0.0
&&&9&9&	1	0.0	99XXX	1	0.0
&&&9&99	1	0.0	99X99	1	0.0
&&&9X&&	1	0.0	999XX	31	0.1
&&&99&&	1	0.0	9999X	3	0.0
&&&99&9	2	0.0	99999	19,921	91.5
&&&999&	1	0.0			
&&&9999	1	0.0			
&&XX&99	1	0.0			
&&99&99	1	0.0			
&&99999	1	0.0			
&99&999	1	0.0			
&999&99	1	0.0			
X&&&&&	1	0.0			
XXXXXXX	10	0.0			
TOTAL	21,769			21,769	

TABLE B-2 (continued)

ACTUAL FORMAT OF REGISTRY STATE LICENSE NUMBERS

State: California
Credential: Medical Doctor

FIRST OR LEFT-MOST 6 BYTES			LAST OR RIGHT-MOST 6 BYTES		
Symbol[a]	Frequency	Percent	Symbol[b]	Frequency	Percent
&&&&&&	124,540	52.2 %	All Blanks	7,104	3.0 %
&&&&&X	6,427	2.7	X	1	0.0
&&&&&9	796	0.3	9	2	0.0
&&&&X&	84	0.0	XX	1	0.0
&&&&X-	19	0.0	X99	2	0.0
&&&&XX	34	0.0	999	8	0.0
&&&&X9	26	0.0	XXXX	1	0.0
&&&&9&	40	0.0	X999	72	0.0
&&&&9X	3	0.0	9999	26	0.0
&&&&99	4	0.0	XX999	2	0.0
&&&X&&	6	0.0	X9X99	3	0.0
&&&X&9	3	0.0	***X9999***	3,556	1.5
&&&X-9	1	0.0	99999	144	0.1
&&&XX&	10	0.0	-99999	50	0.0
&&&XXX	24	0.0	X-9999	4	0.0
&&&XX9	18	0.0	XXXXXX	3	0.0
&&&X9&	2	0.0	XXXX99	1	0.0
&&&X99	5	0.0	XXX999	1	0.0
&&&9&X	1	0.0	XX9999	35	0.0
&&&9&9	3	0.0	X9.999	1	0.0
&&&99&	6	0.0	X9X999	1	0.0
&&&999	21	0.0	X999XX	1	0.0
&&X&&&	3	0.0	X9999-	2	0.0
&&XX&&	2	0.0	X9999X	12	0.0
&&XXXX	1	0.0	X99999	113,421	47.6
&&X9&9	5	0.0	9 XXXX	1	0.0
&&99-&	1	0.0	9-9999	1	0.0
&X&&&&	40	0.0	9XX999	2	0.0
&99999	1	0.0	***9X9999***	817	0.3
X&&&&&	106,186	44.5	99X999	16	0.0
X&&&&X	1	0.0	9999-X	1	0.0
X&&&&9	5	0.0	9999-9	1	0.0
XX&&&&	1	0.0	9999XX	2	0.0
XX&999	8	0.0	99999X	105	0.0
XXXXXX	40	0.0	***999999***	112,986	47.4
XXX999	1	0.0			
X9&&&&	3	0.0			
X99&99	1	0.0			
X999&&	1	0.0			
X9999&	1	0.0			
X99999	2	0.0			
999&9&	10	0.0			
TOTAL	238,386			238,386	

TABLE B-2 (continued)

ACTUAL FORMAT OF REGISTRY STATE LICENSE NUMBERS

State: Florida
Credential: Medical Doctor

FIRST OR LEFT-MOST 3 BYTES

Symbol[a]	Frequency	Percent
&&&	82,787	98.6 %
&&X	790	0.9
&&9	3	0.0
&XX	90	0.1
&9&	2	0.0
&99	2	0.0
X&&	37	0.0
XX&	28	0.0
XXX	181	0.2
9&&	1	0.0
999	4	0.0
TOTAL	83,925	

LAST OR RIGHT-MOST 9 BYTES

Symbol[a]	Frequency	Percent
All Blank	427	0.5 %
X	1	0.0
9	20	0.0
XX	2	0.0
XX-	1	0.0
X99	2	0.0
999	13	0.0
X-99	15	0.0
XX99	5	0.0
9999	571	0.7
X9X99	1	0.0
X9999	2	0.0
99999	3,653	4.4
XX9999	52	0.1
X99999	11	0.0
9X9999	1	0.0
9999XX	1	0.0
99999X	12	0.0
999999	1,400	1.7
X 99999	1	0.0
XX-9999	28	0.0
XXX-999	7	0.0
XXX9999	5	0.0
XX99999	576	0.7
X99999X	1	0.0
X999999	3	0.0
99999-X	1	0.0
99999XX	7	0.0
999999	1	0.0
9999999	1,303	1.6
XX 99999	8	0.0
XX-99999	312	0.4
XXX XXXX	3	0.0
XXX-9999	4	0.0
XXXXXXXX	1	0.0
XXXX99XX	1	0.0
XXXX9999	1	0.0
XXX99999	3	0.0
XX999999	273	0.3
X9999999	7	0.0
9X999999	1	0.0
99999XXX	1	0.0
999999XX	1	0.0
9999999X	1	0.0
99999999	21	0.0
-99999999	2	0.0
X9999999	1	0.0
X 999999	10	0.0
X-99 XXXX	4	0.0
X-9999999	527	0.6
XX-999999	13	0.0
XXX 99999	1	0.0
XXX99999	189	0.2
XX999999	20	0.0
X999XX99	1	0.0
X999999X	27	0.0
XX9999999	41,979	50.0
X999-9999	1	0.0
X9999999X	1	0.0
X99999999	255	0.3
9 9999999	1	0.0
9-9999999	3	0.0
XXX99999	2	0.0
XX99999X	1	0.0
9XX99999	185	0.2
9X9999999	26	0.0
99XX99999	157	0.2
999-99999	1	0.0
999XX9999	3	0.0
999X99999	2	0.0
9999-9999	2	0.0
99999X999	6	0.0
999999 9	1	0.0
999999 XX	1	0.0
999999-XX	1	0.0
999999-99	2	0.0
99999XXX	1	0.0
9999999-9	10	0.0
9999999XX	4	0.0
99999999X	3	0.0
999999999	31,721	37.8
	83,925	

TABLE B-2 (continued)

ACTUAL FORMAT OF REGISTRY STATE LICENSE NUMBERS

State: Maryland
Credential: Medical Doctor

FIRST OR LEFT-MOST 6 BYTES

Symbol*	Frequency	Percent
&&&&&&	31,792	91.2 %
&&&&&X	424	1.2
&&&&&9	27	0.1
&&&&X&	2	0.0
&&&&X-	2	0.0
&&&&XX	57	0.2
&&&&X9	11	0.0
&&&&9&	9	0.0
&&&&99	31	0.1
&&&X&9	1	0.0
&&&X-&	1	0.0
&&&X-9	3	0.0
&&&XX&	119	0.3
&&&XX-	10	0.0
&&&XX9	1	0.0
&&&X9&	10	0.0
&&&X99	1	0.0
&&&9&9	126	0.4
&&&99&	5	0.0
&&&999	10	0.0
&&XX&X	1	0.0
&&XX&9	1	0.0
&&XX-&	2	0.0
&&X9-&	3	0.0
&&9&&9	1	0.0
&&9&9-	1	0.0
&&9&99	2	0.0
&&99&9	13	0.0
&&99X&	5	0.0
&&9999	10	0.0
&X&999	1	0.0
&XX-&9	1	0.0
&X9999	2	0.0
&9&9&9	20	0.1
&9X&&9	3	0.0
&9X&9&	2	0.0
&9X&99	8	0.0
&9X9&&	1	0.0
&9X9&9	4	0.0
&9X99&	2	0.0
&9X999	34	0.1
&999&&	1	0.0
&999&9	3	0.0
&9999&	9	0.0
&99999	15	0.0
X&&&&&	156	0.4
X&&9&9	1	0.0
X&&99&	2	0.0
X&&999	29	0.1
X&9&9&	3	0.0
X&9&99	31	0.1
X&99&&	7	0.0
X&9999	25	0.1
X&999&	34	0.1
X&9999	286	0.8
XXX&99	2	0.0
XXX&9&	2	0.0
XXX&99	13	0.0
XXXX&9	1	0.0
XXXXX&	1	0.0
XXXXXX	23	0.1
XXX9-&	1	0.0
XX99&&	2	0.0
XX99&9	1	0.0
XX9999	11	0.0
X9&&&9	2	0.0
X9&&99	4	0.0
X9&9&&	6	0.0
X9&9&9	12	0.0
X9&9&&	17	0.0
X9&999	84	0.2
X99&&&	1	0.0
X99&&9	5	0.0
X99&9&	13	0.0
X99&99	125	0.4
X9999&	14	0.1
X99989	95	0.3
X99998	120	0.3
X99999	726	2.1
9&&9&&	2	0.0
9&9&&&	1	0.0
9&9&9&	1	0.0
9&9&&9	8	0.0
9&999&	12	0.0
99&9&&	7	0.0
99&99&	24	0.1
9999&&	3	0.0
9999&9	8	0.0
9999&&	74	0.2
99999&	52	0.1
999999	3	0.0
TOTAL	34,847	

LAST OR RIGHT-MOST 6 BYTES

Symbol*	Frequency	Percent
All Blank	3,262	9.4 %
X	2	0.0
9	7	0.0
999	3	0.0
X999	7	0.0
9999	24	0.1
XX999	3	0.0
X999X	1	0.0
X9999	42	0.1
99999	142	0.4
-99999	307	0.9
X XXXX	1	0.0
X 9999	1	0.0
X-9999	7	0.0
XX99XX	1	0.0
XX9999	71	0.2
X99999	27,250	78.2
9 XXXX	3	0.0
9XX999	2	0.0
9X9999	33	0.1
99X999	17	0.0
999 XX	2	0.0
9999-X	4	0.0
9999-9	1	0.0
9999XX	11	0.0
99999X	124	0.4
999999	3,519	10.1
	34,847	

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TABLE B-2 (continued)

ACTUAL FORMAT OF REGISTRY STATE LICENSE NUMBERS

State: Massachusetts
Credential: Medical Doctor

FIRST OR LEFT-MOST 6 BYTES			LAST OR RIGHT-MOST 6 BYTES		
Symbol[a]	Frequency	Percent	Symbol[b]	Frequency	Percent
&&&&&&	56,318	99.2 %	All Blank	3,933	6.9 %
&&&&&X	238	0.4	9	20	0.0
&&&&&9	75	0.1	99X	1	0.0
&&&&XX	21	0.0	X999	2	0.0
&&&&9&	3	0.0	999X	1	0.0
&&&&99	22	0.0	9999	27	0.0
&&&X-9	1	0.0	X9999	4	0.0
&&&XX&	19	0.0	99999	6,041	10.6
&&&XXX	2	0.0	-99999	6	0.0
&&&XX9	2	0.0	X XXXX	4	0.0
&&&X9&	2	0.0	XX9999	6	0.0
&&&9&9	4	0.0	X99999	284	0.5
&&&99&	11	0.0	9 XXXX	1	0.0
&&&999	9	0.0	9X9999	1	0.0
&&XXXX	1	0.0	99X999	14	0.0
&&99&9	1	0.0	999 XX	2	0.0
&&99X&	4	0.0	999-XX	1	0.0
X&&&&&	20	0.0	9999-9	1	0.0
XX&999	3	0.0	9999XX	14	0.0
XXXXXX	13	0.0	99999X	42	0.1
9&9999	1	0.0	999999	46,373	81.7
99&&9&	1	0.0			
999&9&	1	0.0			
99999&	3	0.0			
999999	3	0.0			
TOTAL	56,778			56,778	

TABLE B-2 (continued)

ACTUAL FORMAT OF REGISTRY STATE LICENSE NUMBERS

State: Texas
Credential: Medical Doctor

FIRST OR LEFT-MOST 7 BYTES			LAST OR RIGHT-MOST 5 BYTES		
Symbol[a]	Frequency	Percent	Symbol[b]	Frequency	Percent
&&&&&&&	85,485	99.1 %	All Blank	7,551	8.8 %
&&&&&&X	420	0.5	9	6	0.0
&&&&&&9	38	0.0	99	22	0.0
&&&&&X&	3	0.0	X99	4	0.0
&&&&&XX	56	0.1	999	7	0.0
&&&&&X9	4	0.0	XXXX	241	0.3
&&&&&9&	6	0.0	XXX9	1	0.0
&&&&&99	7	0.0	XX99	4	0.0
&&&&X&&	1	0.0	X99X	4	0.0
&&&&XXX	30	0.0	X999	17	0.0
&&&&X99	2	0.0	9999	67	0.1
&&&&9&&	2	0.0	-9999	55	0.1
&&&&99&	3	0.0	X-999	1	0.0
&&&&99X	1	0.0	XXXX.	2	0.0
&&&&999	4	0.0	XXXXX	14	0.0
&&&X&&9	1	0.0	XXX99	2	0.0
&&&XX&9	17	0.0	XX99X	1	0.0
&&&XXXX	2	0.0	XX999	23	0.0
&&&XX9&	1	0.0	X9X99	4	0.0
&&&XX99	1	0.0	X99XX	1	0.0
&&&X9&&	1	0.0	X99X9	2	0.0
&&&99&&	4	0.0	X999X	3	0.0
&&&99&9	4	0.0	X9999	77,069	89.4
&&&9999	5	0.0	9-999	2	0.0
&&X9&X9	1	0.0	9XXXX	4	0.0
&&99X&&	1	0.0	9XX99	1	0.0
&&99999	1	0.0	9X999	11	0.0
&X9&9&9	1	0.0	99 XX	1	0.0
X&&&&&&	64	0.1	99XXX	2	0.0
XX&9&99	3	0.0	999XX	2	0.0
XX&9999	3	0.0	9999X	26	0.0
XXX&&&&	5	0.0	99999	1,085	1.3
XXXXXXX	52	0.1			
999&9&&	4	0.0			
9999999	2	0.0			
TOTAL	86,235			86,235	

TABLE B-2 (continued)

ACTUAL FORMAT OF REGISTRY STATE LICENSE NUMBERS

State: Utah
Credential: Medical Doctor

LAST OR RIGHT-MOST 12 BYTES

Symbol[5]	Frequency	Percent
All Blank	69	0.9 %
999	2	0.0
XXXX	3	0.0
9999	318	4.1
X9X99	1	0.0
X9999	5	0.1
9999X	3	0.0
99999	370	4.8
X99999	1	0.0
999999	10	0.1
XXXXXXX	1	0.0
X999999	1	0.0
9999999	4	0.1
99999999	6	0.1
XXXX99999	1	0.0
XX9999999	2	0.0
999999999	176	2.3
X999999999	1	0.0
9999999999	1,055	13.7
99999-99999	2	0.0
99999999999	14	0.2
XXXXXXX99999	4	0.1
X99999999999	40	0.5
99999-999 99	1	0.0
9999999999XX	1	0.0
99999999999X	2	0.0
999999999999	5,600	72.8
TOTAL	7,693	

TABLE B-2 (continued)

ACTUAL FORMAT OF REGISTRY STATE LICENSE NUMBERS

State: Washington
Credential: Medical Doctor

FIRST OR LEFT-MOST 7 BYTES

Symbol[a]	Frequency	Percent
&&&&&&	3,839	15.4 %
&&&&&X	51	0.2
&&&&&9	43	0.2
&&&&X&	2	0.0
&&&&XX	36	0.1
&&&&9&	4	0.0
&&&&99	16	0.1
&&&X&&	1	0.0
&&&&X9	1	0.0
&&&XX&	3	0.0
&&&XXX	2	0.0
&&&&XX9	1	0.0
&&&&9&&	13	0.1
&&&&9&9	1	0.0
&&&&9XX	2	0.0
&&&&999	5	0.0
&&X&&&	1	0.0
&&XX&&	25	0.1
&&&XX&9	6	0.0
&&&XX-X	1	0.0
&&&XX9&	2	0.0
&&&XX99	5	0.0
&&&9&&&	1	0.0
&&&9&&9	2	0.0
&&&9&X&	1	0.0
&&&9&9&	3	0.0
&&&9&99	10	0.0
&&&99&&	1	0.0
&&&999&	15	0.1
&&&9999	10	0.0
&X&&&&	3	0.0
&XX&&&	449	1.8
&XXXXX	1	0.0
&&9&&&&	1	0.0
&&9&X&9	2	0.0
&&999&&	4	0.0
&&9999	21	0.1
&&9999&	1	0.0
&&99999	6	0.0
XX&&&&	4	0.0
&XX&&&9	2	0.0
XXXX&&	1	0.0
XXXXXX	6	0.0
&9&99&9	1	0.0
&99&9&&	1	0.0
&999&&&	1	0.0
&999&9&	28	0.1
&999&99	1	0.0
&9999&&	1	0.0
&9999-9	1	0.0
&99999X	1	0.0
&&&&&&	38	0.2
XX&&&9&	1	0.0
X&XXXX	1	0.0
XXXXX&	1	0.0
XXXXXX	57	0.2
XXXXXX9	3	0.0
9&&9&99	1	0.0
9&9&9&&	2	0.0
99&&&&9	1	0.0
99&9&&&	1	0.0
99&9XXX	1	0.0
99&99&&	4	0.0
999&&&&	2	0.0
999&&&9	1	0.0
999&&9&	1	0.0
999&9&&	20,061	80.7
999&9&9	3	0.0
999&9XX	2	0.0
999&99&	3	0.0
999&999	1	0.0
9999X9&	1	0.0
9999&&&	5	0.0
9999&9&	1	0.0
99999&&	37	0.1
999999&	1	0.0
9999999	1	0.0
TOTAL	24,870	

LAST OR RIGHT-MOST 5 BYTES

Symbol[a]	Frequency	Percent
All Blank	70	0.3 %
9	1	0.0
X99	1	0.0
999	44	0.2
X999	1	0.0
9999	261	1.0
-9999	1	0.0
XXXXX	3	0.0
XXXX9	1	0.0
XX999	1	0.0
XX999	3	0.0
X999X	1	0.0
X9999	32	0.1
99 9	2	0.0
99-99	1	0.0
99XXX	1	0.0
999 9	1	0.0
999.9	1	0.0
999XX	59	0.2
999X9	25	0.1
9999X	11	0.0
99999	24,349	97.9
	24,870	

TABLE B-2 (continued)

ACTUAL FORMAT OF REGISTRY STATE LICENSE NUMBERS

State: Alabama
Credential: Osteopaths

FIRST OR LEFT-MOST 7 BYTES			LAST OR RIGHT-MOST 5 BYTES		
Symbol[a]	Frequency	Percent	Symbol[b]	Frequency	Percent
&&&&&&&	538	100.0 %	XX999	502	93.3 %
			X9999	29	5.4
			9X999	1	0.2
			99999	6	1.1
TOTAL	538			538	

Credential: Dentists

FIRST OR LEFT-MOST 8 BYTES			LAST OR RIGHT-MOST 4 BYTES		
Symbol[a]	Frequency	Percent	Symbol[b]	Frequency	Percent
&&&&&&&&	20	5.7 %	9999	152	43.4 %
&&&&&&X	132	37.7	999	1	0.3
&&&&&&&&	107	30.6	9999	197	56.3
&&&&&&X	86	24.6			
&&&&&&9	4	1.1			
&&&&&XX	1	0.3			
TOTAL	350			350	

Credential: Physical Therapy

FIRST OR LEFT-MOST 8 BYTES			LAST OR RIGHT-MOST 4 BYTES		
Symbol[a]	Frequency	Percent	Symbol[b]	Frequency	Percent
&&&&&&&&	34	46.6 %	999	1	1.4 %
&&&&&&X	39	53.4	X999	2	2.7
			9999	70	95.9
TOTAL	73			73	

TABLE B-2 (continued)

ACTUAL FORMAT OF REGISTRY STATE LICENSE NUMBERS

State: Florida
Credential: Podiatry

FIRST OR LEFT-MOST 3 BYTES			LAST OR RIGHT-MOST 9 BYTES		
Symbol[a]	Frequency	Percent	Symbol[b]	Frequency	Percent
&&&	2,200	98.3 %	All Blanks	2	0.1 %
&&X	34	1.5	999	54	2.4
&XX	2	0.1	9999	90	4.0
XX&	1	0.0	***XX999***	2	0.1
XXX	1	0.0	X9999	1	0.0
99&	1	0.0	99999	3	0.1
			XX9999	30	1.3
			X99999	2	0.1
			999999	24	1.1
			XX-9999	1	0.0
			XXXX999	1	0.0
			XX99999	2	0.1
			X9-9999	1	0.0
			X999999	3	0.1
			9999999	21	0.9
			XX999999	7	0.3
			X9999999	6	0.3
			99999999	3	0.1
			X 9999999	5	0.2
			X-9999999	11	0.5
			XX-999999	1	0.0
			XXXX99999	1	0.0
			XX999999X	5	0.2
			XX9999999	1,125	50.2
			X99999999	75	3.3
			9-9999999	1	0.0
			9XX99999X	1	0.0
			9XX999999	42	1.9
			9X9999999	2	0.1
			99XX99999	2	0.1
			999XX9999	23	1.0
			999X99999	3	0.1
			99999X999	1	0.0
			999999999	688	30.7
TOTAL	2,239			2,239	

TABLE B-2 (continued)

ACTUAL FORMAT OF REGISTRY STATE LICENSE NUMBERS

State: Florida
Credential: Chiropractic

FIRST OR LEFT-MOST 3 BYTES			LAST OR RIGHT-MOST 9 BYTES		
Symbol[a]	Frequency	Percent	Symbol[b]	Frequency	Percent
&&&	3,767	98.5 %	All Blanks	4	0.1 %
&&X	41	1.1	999	1	0.0
&&9	1	0.0	9999	158	4.1
&XX	4	0.1	X9999	1	0.0
XX&	4	0.1	99999	3	0.1
XXX	9	0.2	***XX9999***	31	0.8
			999999	85	2.2
			XX-9999	1	0.0
			XXX9999	1	0.0
			XX99999	3	0.1
			X999999	1	0.0
			99-9999	1	0.0
			9999999	30	0.8
			XX-99999	1	0.0
			XX999999	19	0.5
			99999999	2	0.1
			X 9999999	1	0.0
			X-X999999	1	0.0
			X-9999999	18	0.5
			XX 999999	1	0.0
			XX-999999	3	0.1
			XXXXX9999	1	0.0
			XXXX99999	9	0.2
			XX999999X	2	0.1
			XX9999999	2,100	54.9
			X9-999999	1	0.0
			X99999999	20	0.5
			9-9999999	1	0.0
			9XX999999	38	1.0
			999XX9999	22	0.6
			9999999XX	2	0.1
			999999999	1,264	33.0
TOTAL	3,826			3,826	

TABLE B-2 (continued)

ACTUAL FORMAT OF REGISTRY STATE LICENSE NUMBERS

State: Florida
Credential: Optometry

FIRST OR LEFT-MOST 3 BYTES			LAST OR RIGHT-MOST 9 BYTES		
Symbol[a]	Frequency	Percent	Symbol[b]	Frequency	Percent
&&&	2,867	99.0 %	All Blanks	1	0.0 %
&&X	20	0.7	999	71	2.5
XXX	7	0.2	9999	251	8.7
XX9	1	0.0	***XX999***	7	0.2
9&9	1	0.0	99999	2	0.1
			XX9999	49	1.7
			9X9999	1	0.0
			999999	12	0.4
			XX 9999	1	0.0
			XX-9999	3	0.1
			XX99999	2	0.1
			9999999	55	1.9
			XX999999	4	0.1
			99999999	2	0.1
			X 9999999	3	0.1
			X-9999999	11	0.4
			XXXX99999	7	0.2
			XX9999999	966	33.4
			X99999999	8	0.3
			9XXXX9999	1	0.0
			9XX999999	13	0.4
			9X9999999	12	0.4
			99XXX9999	1	0.0
			99XX99999	2	0.1
			999/XX999	1	0.0
			999XX9999	32	1.1
			9999XX999	4	0.1
			9999X9999	1	0.0
			99999-999	2	0.1
			999999999	1,371	47.3
TOTAL	2,896			2,896	

TABLE B-2 (continued)

ACTUAL FORMAT OF REGISTRY STATE LICENSE NUMBERS

State: Texas
Credential: Clinical Psychology

FIRST OR LEFT-MOST 8 BYTES			LAST OR RIGHT-MOST 4 BYTES		
Symbol[a]	Frequency	Percent	Symbol[b]	Frequency	Percent
&&&&&&&&	99	5.0 %	X99X	1	0.1 %
&&&&&&&9	1,855	94.5	9999	1,962	99.9
&&&&&&9&	3	0.2			
&&&&&&99	6	0.3			
TOTAL	1,963			1,963	

State: Texas
Credential: Clinical Social Worker

FIRST OR LEFT-MOST 4 BYTES			LAST OR RIGHT-MOST 8 BYTES		
Symbol[a]	Frequency	Percent	Symbol[b]	Frequency	Percent
&&&&	1,786	100.0 %	999999	1	0.1 %
			99X99999	42	2.4
			999X9999	1	0.1
			9999X99X	2	0.1
			99999999	1,740	97.4
TOTAL	1,786			1,786	

State: Texas
Credential: Clinical Registered Nurse Anesthetists

FIRST OR LEFT-MOST 6 BYTES			LAST OR RIGHT-MOST6 BYTES		
Symbol[a]	Frequency	Percent	Symbol[b]	Frequency	Percent
Ampersands	2,606	99.9 %	999999	2,608	100.0 %
000002	1	0.0			
000004	1	0.0			
TOTAL	2,608			2,608	

NOTES: A box around a symbol denotes a correct format.
[a] &: 0, BLANK; 9: DIGIT 1 through 9; X: any letter
[b] 9: any DIGIT X: any LETTER

SOURCE: July 1996 Physician Registry.

APPENDIX C

CARRIER NAME AND CONTRACT CHANGES, 1992-96

APPENDIX C

CARRIER NAME AND CONTRACT CHANGES, 1992-96

Carrier Code	1992 Name	New Contractor or Alternate Name
00542	California BS	BC of CA - California Physician's Service
00570	Pennsylvania BS, DE	Xact Medicare Services - DE
00580	Pennsylvania BS, DC	Xact Medicare Services - DC
00621	Illinois BC/BS	Health Care Service Corporation - IL
00630	Indiana BC/BS	AdminaStar Federal of Indiana
00640	Iowa BS	IASD Health Services
00660	Kentucky BC/BS	AdminaStar of Kentucky
00700	Massachusetts BC/BS	C&S Administrative Services, MA
00720	Minnesota BC/BS*	Blue Cross and Blue Shield of Arkansas - MN
00825	North Dakota BC/BS, WY	Blue Cross & Blue Shield of Wyoming
00860	Pennsylvania BS, NJ	Xact Medicare Services - NJ
00870	Rhode Island Blue Shield*	MetraHealth - RI
00880	South Carolina BC/BS	Palmetto Government Benefits Administrators
05130	Equicor Life Assurance, ID*	Connecticut General Insurance Co. of N. America - ID
05440	Equicor Life Assurance, TN*	Connecticut General Insurance Co. of N. America - TN
05535	Prudential, NC*	Connecticut General Insurance Co. of N. America - NC
10230	Travelers Insurance Co., CT	MetraHealth - CT**
10240	Travelers Insurance Co., MN	MetraHealth - MN**
10250	Travelers Insurance Co., MS	MetraHealth - MS**
10490	Travelers Insurance Co., VA	MetraHealth - VA**
11260	Missouri General Am. , MO	General American Life Insurance Company
14330	Group Health Insurance, NY	Group Health Incorporated
16360	Nationwide Insurance Co., OH	Nationwide Mutual Company - OH

CARRIERS WHICH CHANGED NAMES AND/OR NUMBERS

Carrier Code	1992 Name	New Number	New Contractor or Alternate Name
00550	Colorado BC/BS	00824	Blue Cross & Blue Shield of Colorado
00690	Maryland Blue Shield	00901	Blue Cross & Blue Shield of Texas, Inc. - MD
00710	Michigan BC/BS	00623	Health Care Service Corporation - MI
00780	Massachusetts BC/BS, NH-VT	00780	C&S Administrative Services - VT
		00781	C&S Administrative Services - NH
00932	Washington Physician Service	01390	Aetna Life Insurance Company - WA

* Contract change as well as name change.

** MetraHealth purchased the Medicare Part B contracts from Travelers.

SOURCE: HCFA Intermediary and Carrier Directory (1/95), HCFA Part B Medicare Carriers Locality Codes (9/95), UPIN Location Address Finalist Report - Summary (9/96) and carrier interviews conducted by HER.

APPENDIX D

DATA COLLECTION INSTRUCTIONS FOR HIGH-VOLUME PHYSICIAN INVESTIGATION

High-Volume Medicare Physicians, 1994

Introduction

One of HCFA's on-going concerns is the existence and rationale for physicians with high annual Medicare volume and allowed charges (greater than one million dollars in total). Little is known about the circumstances under which such high billing arise. As a consequence, HCFA has contracted with Health Economics Research, Inc. (HER) to coordinate with Medicare Part B carriers on an investigation of high volume physicians. (This task is part of a larger contract to enhance HCFA's ability to conduct analyses using claims data.)

The investigation tasks are divided between HER and the carriers. HER's tasks include:

- the design of the analytic plan;
- the specification of the data to be collected by the carriers; and
- analysis of the data collected.

Carriers are in the best position to perform the data collection task. HER anticipates, in addition to extracting information from their information system, that the carriers will need to contact the offices of high-volume physicians.

HCFA has provided HER with a list of physicians (and their UPINs) with one million dollars or more of allowed charges during 1994. From this list, HER has selected for the investigation up to five physicians per participating carrier. (If you have not already received the list of the high-volume physicians, they are provided in the attached materials.)

Analytic Approach

The analytic approach that was adopted considers the physician's practice as a whole, *as it existed in 1994*. It is designed to differentiate, to the extent possible, between the following possible factors associated with high total allowed charges:

- extensive use of physician extenders;
- inappropriate usage (inadvertent or otherwise) of a given physician's UPIN by more than one physician in a group or partnership setting;
- conspicuously large shares of laboratory or other ancillary claims; and
- other extraordinary patterns in the claims data.

As a consequence, both the inputs (e.g., staffing) and the outputs (e.g., claims) of the practice should be examined. For instance, a million dollars in allowed charges could be quite easily and appropriately be generated by a solo physician who employed five nurse practitioners.

Data Collection Guidelines

A series of forms (enclosed) were designed to identify the type of data that needs to be collected on high-volume physicians. The table below indicates the suggested forms to be used for data collection for various practice types.

Form Title	Practice Type	
	Solo Practice only	Group or Partnership Member
Solo Practitioners	X	
Group or Partnership Member		X
On-Site Diagnostic and Laboratory Services	X	X
Composition of Medicare Volume & Charges	X	X

Follow the guides for *Solo Practitioners* for those physicians that have a solo practice, regardless of the number of locations maintained by the practice. Follow the guides for *Group Physicians* for those physicians who are a member of at least one group practice or partnership. For physicians who are group members and also maintain separate solo practices as well, follow the guides for *Group Physicians* for the group portion of his/her overall practice and the guides for *Solo Practitioners* for the solo portion of his/her overall practice. Using 1994 information obtained from the *Physician Registry*, HER classified the high-volume physicians by practice type (see the attached list of high-volume physicians). Since HER used the April 4, 1994 version of the *Physician Registry* to classify the physicians, please check your provider file for subsequent changes during 1994 and, if necessary, reclassify the physicians.

Since the forms were designed as data collection guides, carriers are not obligated to report the data collection results in the format specified in the forms, although it would be helpful if they were so-reported. To assist carriers, the following data collection guides are specified for each form as well as each practice type.

Forms for Solo Practitioners

1. Solo Practitioner Form

   a. Obtain *Physician Information* from your provider file or other internal sources.

      1) Since the current provider file might no longer contain 1994 data, it might be necessary to contact the physician's office to obtain the relevant data.

2) If date of birth, graduation year, credential, or primary specialty (as of 1994) is not present in the provider file, obtain it from the physician's office.

b. Obtain information on physician extenders and similar providers from the high-volume physician's office.

1) Obtain, by type of physician extender:
   a) the number of full- and part-time staff
   b) submitted charges
2) Don't let difficulties in obtaining submitted charges interfere with other data collection efforts.
3) If Medicare submitted charges are not available, those for the entire practice are a suitable proxy; check the appropriate blank at the bottom of the table.
4) If the physician has more than one office, combine all information in one summary table.

2. On-Site Diagnostic and Laboratory Services Form

a. Put the high-volume physician's name in the blank space provided just above the table.

b. We anticipate that carriers will need to obtain information on "in-house" diagnostic and laboratory services provided by the practice in 1994 by contacting the physician's office.

c. For each diagnostic or laboratory service, check the "Yes" box if the physician provides the service on an "in-house" basis at any of the practice locations, regardless of whether the equipment was owned or leased.

3. Composition of Medicare Volume and Charges Form

a. Put the high-volume physician's name in the blank space provided in the title at the top of the page.

b. Carriers should be able to obtain total Medicare volume (line items) and allowed charges during 1994 from their claims system.

c. For the sake of consistency in analyzing data, HER requests that HCFA's type of service (TOS) classification be used. If, however, the carrier does not have the capability of mapping to HCFA's TOS categories, the carrier may use its own TOS classification system instead. If the carrier uses its own TOS system, please provide a description of each TOS category.

d. Note that we are requesting that evaluation and management (E & M) services be "broken out" from total medical care.

1) E & M services are covered by CPT codes 99201 through 99499.
2) If the carrier uses its own TOS system, we would like E & M to broken out, if possible, from the carrier's equivalent medical care category.

Forms for Group Physicians or Partnership Members

1. Group Members Form

a. Complete a separate form for each group (or practice) in which the high-volume physician is a member.

Page 1

b. Obtain the *High-Volume Physician Information* from your provider file or other internal sources.

1) Since the current provider file might no longer contain 1994 data, it might be necessary to contact the physician's office to obtain the relevant data.
2) If date of birth, graduation year, credential, or primary specialty (as of 1994) is not present in the provider file, obtain it from the physician's office.

c. Obtain the group name and its main address from the provider file. Since the group name might have changed since 1994, please verify that its name did not change after 1994.

d. For the Physician Staffing table:

1) HER anticipates that it will be necessary for the carrier to contact the group (or practice) to obtain full- and part-time staffing by physician type.
2) The number of Medicare line items and allowed charges should be obtainable from the carrier's own claims system.
3) If the group has more than one location, sum the values over all locations.

Page 2

e. For the Primary Specialty table:

1) HER anticipates that it will be necessary for the carrier to contact the group (or practice) to obtain full- and part-time staffing by type of medical doctor.
2) If the group has more than one location, sum the values over all locations.

f. For the Physician Extender table:

1) Obtain information on physician extenders and similar providers from the group's (or practice's) office.
2) Obtain, by type of physician extender:
   a) the number of full- and part-time staff
   b) submitted charges
3) Don't let difficulties in obtaining submitted charges interfere with other data collection efforts.
4) If Medicare submitted charges are not available, those for the entire practice are a suitable proxy; check the appropriate blank at the bottom of the table.
5) If the group (or practice) has more than one office, combine all information in one summary table.

2. On-Site Diagnostic and Laboratory Services Form

a. Complete a separate form for each group (or practice) in which the high-volume physician is a member.

b. Put the group (or practice) name in the blank space provided just above the table.

c. We anticipate that carriers will need to obtain information on "in-house" diagnostic and laboratory services provided by the practice in 1994 by contacting the group's (or practice's) office.

d. For each diagnostic or laboratory service, check the "Yes" box if the group (or practice) provides the service on an "in-house" basis at any of the practice locations, regardless of whether the equipment was owned or leased.

3. Composition Medicare Volume and Charges Form

a. For each group in which a high-volume physician is a member, please fill out the chart for both:

1) the physician him/herself, and
2) for the entire group (or partnership).

Note: in both cases, if the group (or practice) has more than one location, sum values over all locations.

b. Put the group (or practice) or physician's name in the blank space provided in the title at the top of the page.

c. Carriers should be able to obtain total Medicare volume (line items) and allowed charges during 1994 from their claims system.

d. For the sake of consistency in analyzing data, HER requests that HCFA's type of service (TOS) classification be used. If, however, the carrier does not have the capability of mapping to HCFA's TOS categories, the carrier may use its own TOS classification system instead. If the carrier uses its own TOS system, please provide a description of each TOS category.

e. Note that we are requesting that evaluation and management (E & M) services be "broken out" from total medical care.

   1) E & M services are covered by CPT codes 99201 through 99499.
   2) If the carrier uses its own TOS system, we would like E & M to broken out, if possible, from the carrier's equivalent medical care category.

If you should have questions regarding the collection of the requested data, please contact Dr. Killard W. Adamache (HER's project director) at (617)487-0200, ext. 137 or Tim Dawes at ext. 127.

This high-volume physician investigation, jointly carried out by the carriers and HER, is an exploratory data collection and analysis task. HCFA is also interested in learning about the difficulties encountered by carriers arising from carrying out the task. HCFA would appreciate it if the carriers would provide a description of those difficulties. This will be useful for future research attempting similar investigations on a larger scale. The description of the data collection difficulties should be sent to HER. Carrier complaints regarding HER can be sent, at the carrier's discretion, to either HER or the HCFA project officer, Dr. Ann Meadow, who can be contacted at (410)786-6602.

HCFA and HER would like to thank, in advance, those carriers which agreed to participate in this investigation.

Solo Practitioners

Practice Characteristics, 1994

Physician Information

Name: _____ **UPIN:** _____

Address: _____

City: _____ **State:** _____ **Zip:** _____

Other offices? Yes ____ No ____

Date of Birth: _____ **Year** graduated from medical school: _____

Credential: _____ (e.g., MD, DO, DDS, DPM, etc.) **Specialty** *Primary:* _____ (e.g., FP, GP, Internal Medicine, cardiology, etc.) *Secondary:* _____

Physician Extenders and other similar care providers (all offices, if more than one)

Type of Physician Extender	Number of Full-Time	Number of Part-Time	Submitted Charges*
Physician Assistants			
Nurse Practitioners			
Registered Nurses			
Physical Therapists			
Other, specify type:			

*Prefer only those for Medicare; will accept, however, total practice values. Using a check mark, please indicate which: Medicare only _____ Total Practice _____

Group Practice or Partnership Member

High-Volume (Subject) Physician Information

Name: _____ **UPIN:** _____

Check all that apply: Member of another group? ____ Has separate solo practice? ____

Date of Birth: _____ **Year graduated from medical school:** _____

Credential: _____ (e.g., MD, DO, DDS, DPM, etc.) **Specialty** *Primary:* _____ (e.g., FP, GP, Internal Medicine, cardiology, etc.) *Secondary:* _____

Group Practice (Partnership) Characteristics, 1994

Group Name: _____

Address: _____

City: _____ **State:** _____ **Zip:** _____

Other Locations? Yes _____ No _____

Physician Staffing†	Number of		Number of Line Items*	Allowed Charges*
	Full-Time	Part-Time		
High-Volume (Subject) Physician				
Other Physicians				
Medical Doctors				
Osteopaths				
Doctors of Dental Medicine				
Doctors of Dental Surgery				
Podiatrists				
Optometrists				
Chiropractors				
Total				

†If the group has more than one location, sum over all locations.
*Medicare only.

Primary Specialty of Medical Doctors (if applicable and over all locations, if more than one)

Specialty	Number of		Specialty	Number of	
	Full-Time	Part-Time		Full-Time	Part-Time
General Practice			Ophthamology		
Family Practice			Orthopedic Surgery		
Internal Medicine			Dermatology		
Cardiology			Neurology		
General Surgery			Neurosurgery		
Thoracic Surgery			Plastic Surgery		
Radiology			OB/GYN		
Anesthesiology			Other, specify:		
Pathology					
Gastroenterology					
Otolaryngology					
Urology					
Pulmonary Disease					

Physician Extenders and other similar care providers (all offices, if more than one)

Type of Physician Extender	Number of		Submitted Charges*
	Full-Time	Part-Time	
Physician Assistants			
Nurse Practitioners			
Registered Nurses			
Physical Therapists			
Other, specify type:			

*Prefer only those for Medicare; will accept, however, total practice values. Using a check mark, please indicate which: Medicare only _____ Total Practice _____

On-Site Diagnostic and Laboratory Services, 1994

(all offices, if more than one)

Group or Physician Name: _____

Service*	Yes	No
Diagnostic		
X-Ray		
EKG		
Diagnostic Ultrasound		
Upper GI Endoscopy		
Flexible Sigmoidoscopy		
Diagnostic Colonoscopy		
Cardiovascular Stress Test		
ECG		
Myocardium or cardiac blood pool imagery		
CT Scan		
MRI		
Nuclear Scan		
Other, specify:		
Laboratory		
Clinical Chemistry		
Hematology		
Microbiology		
Histology		
Other, specify:		

*Includes services provided by leased equipment as well as owned equipment.

Composition of Medicare Volume and Charges for _____
(Physician or Group Name)

by Type of Service, 1994

Type of Service*		Number of Line Items	Allowed Charges
Code	Description		
0	Whole blood or packed red cells		
1	Medical care		
	Evaluation & Management,[1] only		
2	Surgery		
3	Consultation		
4	Diagnostic radiology		
5	Diagnostic laboratory		
6	Therapeutic radiology		
7	Anesthesia		
8	Assistant at Surgery		
9	Other medical items or services		
A	Used DME		
B	High risk screening mammography		
C	Low risk screening mammography		
E	Enteral/parenteral nutrients/supplies		
G	Immunosuppressive drugs		
I	Purchase of DME (installment basis)		
L	Renal supplies in the home		
M	Monthly capitation payment (dialysis)		
N	Kidney donor		
P	Purchase of DME (lump sum payment)		
R	Rental of DME		
T	Psychological therapy		
U	Occupational therapy		
V	Pneumococcal vaccine		
W	Physical therapy		
	All other services not listed above		
	Total		

*HCFA's Type of Service (TOS) categories; use your own TOS categories if your system does not have the capability of mapping to HCFA's.

[1]CPT codes 99201-99499 (inclusive)

APPENDIX E

CARRIER RECORD REQUIREMENTS FOR THE REGISTRY

CARRIER RECORD REQUIREMENTS

Field Number	Item	M.D.s/D.O.s Record	Other Doctor's Record
1.*	Record Code	Required	Required
2.*	Record Status	Required	Required
3.	Last Name	Required	Required
4.	First Name	Required	Required
5.	Middle Name/Initial	Required	Required
6.	Name Suffix	Required	Required
7.†	Street (Billing Address)	Required	Required
8.†	City (Billing Address)	Required	Required
9.†	State (Billing Address)	Required	Required
10.	ZIP Code (Billing Address)	Required	Required
11.†	Street (Business Address)	Required	Required
12.†	City (Business Address)	Required	Required
13.†	State (Business Address)	Required	Required
14.	ZIP Code (Business Address)	Required	Required
15.	State Licensed In	Required	Required
16.	Physician/Health Care Practitioner State License/Registration Number	Required	Required
17.	Date of Birth	Required	Required
18.	Medical School Graduated	Required	Required
19.	Medical School Year Graduated	Required	Required
20.	Date of Death	If Available	If Available
21.	Credentials	Required	Required
22.	Primary Specialty Code	Required	Required
23.	Primary Board Certification Indicator	If Available	If Available
24.	Secondary Specialty Code	If Available	If Available
25.	Secondary Board Certification Indicator	If Available	If Available
26.	Type of Sanction Code	If Available	If Available
27.	Effective Date of Sanction	If Available	If Available
28.	Number of Sanctioned Years	If Available	If Available
29.	Deactivate Resident/Intern Practice Code	Required	Required
30.	Group Practice Indicator	Required	Required
31.	Physician/Health Care Practitioner Participation Indicator	Required	Required
32.†	Tax Identification Number	Required	Required
33.*	Carrier Provider Number	Required	Required
34.*	Registry's Assigned UPIN	N/A	N/A
35.*	Transamerica Number	N/A	N/A
36.*	Incoming Carrier Number	Required	Required
37.*	Registry Assigned Error Codes/ Notification Codes	N/A	N/A
38.*	Record Validation Field	N/A	N/A
39.*	Special Processing Indicator	N/A	N/A
40.*	Special Processing Data	N/A	N/A
41.†	Individual Social Security Number	Required	Required
42.	Filler	N/A	N/A

N/A = Not Applicable on initial data submission

* Administrative data element; not analyzed in Chapter 4.

† Although always part of the carrier record, not maintained on the Registry until after 1994.

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